DOCUMENT RESUME

ED 187 363 JC 800 256

TITLE Community College Research: Methods, Trends, and Prospects. Proceedings of the National Conference on Institutional Research in Community Colleges, August 1976.
INSTITUTION Educational Testing Service, Princeton, N.J.
SPONS AGENCY American Association of Community and Junior Colleges, Washington, D.C.; College Entrance Examination Board, Princeton, N.J.
PUB DATE 77
NOTE 205p.

EDRS PRICE MF01/PC09 Plus Postage.
DESCRIPTORS *College Administration; *College Planning; *Community Colleges; Data Analysis; Data Collection; Educational Trends; *Institutional Research; Program Evaluation; Research Methodology; *Research Needs; Research Reports; *Research Utilization; Statewide Planning; Statistical Analysis; Two Year Colleges

ABSTRACT

Information on institutional research, planning, and evaluation is provided in 15 conference presentations. The papers included in the collection are: (1) "The Nature of Institutional Research in the Community College (CC)" by James L. Wattenbarger; (2) "The Range and Organization of Data for Research" by Richard L. Alfred; (3) "Research Methods and Statistical Analyses for Developing Professionals in Institutional Research" by James W. Selgas; (4) "Some Practical Considerations in Analyzing and Interpreting Data" by Arthur N. Cherdack; (5) "Developing and Disseminating Research Reports" by Robert Gell; (6) "Management: Developing Issues and CC Research" by Nolen M. Ellison; (7) "Conceptualizing CC Research at the National Level" by John Lombardi; (8) "Developing Issues and CC Research" by Dorothy M. Knoell; (9) "The Case for Statewide Coordination of Institutional Research in the CC" by Ivan J. Lach; (10) "A User-Oriented Approach to Program Evaluation" by Lorraine Beitler; (11) "Management and Research: An Essential Partnership?" by Boris Blai; (12) "Institutional Research and Management: The Essential Partnership" by Cheryl Opacinch; (13) "An Organizational Perspective on Institutional Research in the Eighties" by Ervin Harlacher; and (14) "Identifying Institutional Research Needs" and (15) "Is Information Power?" by Leslie Myles. (AYC)

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ED187363

COMMUNITY COLLEGE RESEARCH

Methods, Trends, and Prospects

Proceedings of the
National Conference on Institutional Research
in Community Colleges

August 1976

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NATIONAL INSTITUTE OF
EDUCATION

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The National Conference on Institutional Research in Community Colleges was held at the Henry Chauncey Conference Center, Princeton, New Jersey, on August 2-5, 1976.

Conference Director: RICHARD L. ALFRED
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Educational Planning, Research and Development
New York City Community College
New York, New York

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FOREWORD

In recent years, as institutional resources have dwindled and demands for accountability from students, faculty, the community, and state agencies have increased dramatically, institutional research has become even more essential for community college management than ever before. Decision makers are depending increasingly on accurate information for such things as assessing educational needs, allocating resources, assessing institutional effectiveness, and coordinating data collection and analysis.

The 1976 Conference on Institutional Research in Community Colleges, held at the Henry Chauncey Conference Center in Princeton, New Jersey, was designed to meet the needs of developing professionals in institutional research, planning, educational development, and evaluation. In this volume, we offer the papers that were presented at that conference. The authors explore such questions as: What is the role of research in community college management? What emerging issues, problems, and concerns need to be addressed? How does research relate to institutional goals, planning, and evaluation? What methods and techniques are used in effective institutional research programs?

We are grateful for the opportunity to offer these stimulating papers which, we hope, will contribute to a broader understanding of the vital tasks of institutional research in community colleges.

James R. Deneen
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Educational Testing Service

THE NATURE OF INSTITUTIONAL RESEARCH IN THE COMMUNITY COLLEGE

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An examination of the titles of the monographs Jossey-Bass has published under the general series called New Directions for Institutional Research provides a basis for assessing the current nature of institutional research in institutions of higher education. These titles are:

- Evaluating Institutions for Accountability
- Assessing Faculty Effort
- Toward Affirmative Action
- Organizing Non-traditional Study
- Evaluating Statewide Boards
- Assessing Academic Progress Without Growth
- Responding to Changing Human Resources
- Measuring and Increasing Academic Productivity
- Assessing Computer-based Models

Examining Departmental Management

These titles as well as the various chapters in each monograph written by persons who are more often than not professionally involved in institutional research provide an observer with a basis for asserting that institutional research must be beginning to assume its potential role as described by Hugh Stickler almost 20 years ago.

Stickler, along with Brumbaugh, Roueche, Cook, Swanson, Doi, and Van Istendahl had attempted to define institutional research in a way that made it an operational rather than an esoteric concept.

Stickler said that institutional research ". . .is directed toward providing data useful or necessary in the making of intelligent administrative decisions and/or improvement of a given institution of higher education."

The monograph titles represent not only the direction that institutional research has taken more recently but also the depth that management currently requires. As management has improved, information requirements have increased.

The Nature of Institutional Research

In the operational concept of research, "pure" research is that which advances the frontiers of knowledge and which at the moment of discovery may seem to have little or no practical application; "applied" research is that which is designed to answer questions and to aid in solving problems. While this dichotomy may be entirely too simplistic, it does provide a useful basis for institutional research design. The nature of institutional research is to carry out activities that will provide data for improving the college.

A program of institutional research does more than compile data, however. Unfortunately, much of the institutional research conducted by junior colleges prior to 1968 has been judged as worthless "because of faulty design, poor methodology, ungeneralizable findings, or just poor quality. . ." as assessed by Roueche and Boggs(1). Turner subsequently agreed in 1971. It seems doubtful that appreciable improvement has developed in the few years since 1968, even though many institutions have provided a more serious allocation of resources to this specific activity than was previously true.

What is the nature of a good institutional research program in a community college? Referring to the monograph titles, the nature of a program of institutional research consists of a formative systematic evaluation procedure focused upon the institution itself and such areas of inquiry as: institutional goals, students, faculty, curriculum, administration, facilities, and the community, as well as a continuing analysis of financial support and expenditure patterns.

Cook's study in 1971 identified areas of inquiry in their order of priority, according to 215 jurors who were deemed to be representative of the community college professional cadre. This group gave highest priority to topics concerned with students: enrollment trends, profiles of student characteristics, student attrition, and other follow-up studies. They also gave priority to studies dealing with institutional goals, especially as they relate to the community environment and as they may be evaluated as adequate statements. Cook reported that other areas of inquiry relate to curriculum, management, and institutional control of operations. He also reported that studies of administrative policy and procedure were not given much support by the jury.

The nature of institutional research is a process of data gathering that can be directed or focused by the proper questions.

These questions, when correctly framed, establish the boundaries of institutional research in an institution. For example:

1. What effect does probation status have upon students?
2. What teaching procedures are most cost-effective?
3. What schedule provides the most effective use of facilities?
4. What new programs will the community need by 1980?
5. Where will noncredit courses be needed within the area?

These kinds of questions will provide data that can be used as a basis for policy and action.

It is important, however, especially in view of conclusions related above concerning the quality of institutional research, to gather data in a soundly designed research framework. Too often research methods have included one or more of the following types of study design or approaches:

1. The Pooling of Ignorance. In this study design, an uncomplicated "Gallup" Poll is used to acquire data in an area which requires expert and experienced opinion. The result is statistical analysis of ignorant opinion.
2. Persuasive Stubborness. In this approach, a position defended by invalid assumptions or by "common sense" logic is taken and never abandoned. Any opposing position is beaten down through repetition and logic not necessarily based in fact.
3. Appeal to Authority. This study technique includes a plethora of quotations selected because they are in print and because they agree with an answer previously determined to be the correct one.

4. *Professional Confidence*. This design values data which validate a personal experience and rejects data which do not confirm a position determined by earlier conjecture.
5. *Parroting*. This approach places heavy emphasis on what others are doing. The assumption is that if enough others are doing it, it is goo.
6. *Intuitive Determination*. This design supports a position because it seems so right. And it is, of course, as everyone knows.

Pierce described a similar concern for proper design when he contrasted the method of science with research design base upon tenacity, authoritarianism, and a priori procedures. So the nature of institutional research may be described both in terms of areas of inquiry and appropriate methodology.

Suslow defined the nature of institutional research for the Association for Institutional Research in 1971. He emphasized that institutional research is an attitude and he described the research activities as the systematic appraisal of the higher education effort through critical appraisal and careful investigation of its processes and programs.

He concluded that "If the appraisal is not systematic and factual, if it is not concerned with commonly accepted higher education values, if it is more or less continuous, then it is not institutional research." He emphasized formative evaluation of purposes and values as well as efficiency and productiveness.

How institutional research should be used depends upon both the nature and the quality of the research. Here again, the list of the *New Directions* monographs provides a summary of the current uses. From evaluating the faculty to improving the curriculum to allocating resources, the uses of institutional research data are obviously required for sound operation. Day-to-day decision making as well as long-range planning depend on data that can best be provided through a sound institutional research program.

With these concerns as background, a list of guidelines may be expressed as a basis for community college institutional research:

1. *Establish a philosophy of research*. The community college is a service-oriented institution, not a center for basic or pure research. The overall goals and purposes as well as the commitments of institutional research must be clearly stated and commonly understood. This philosophy must fit into the overall institutional philosophy, its role, and its scope.
2. *Focus responsibility for the activity*. Everyone's job is no one's job. All administrators know this, yet a number of community colleges still have no designated person who is responsible for institutional research. Someone must be appointed to coordinate all types of institutional research in a college.
3. *Establish a rational position in the organization structure*. Lines of responsibility must include both superordinate and subordinate. There are several alternate patterns; no one

can claim to have a best structure. Each must have a rationale which is defensible for a specific situation.

4. Provide an institution-wide advisory committee. It is important that faculty also feel a responsibility for institutional research. This is best done through an advisory committee that represents all elements of the faculty.

5. Arrange for adequate financial support. It should be obvious that nothing happens without resources. Industrial firms may allocate 15 to 20 percent of their budget for research. Colleges most likely do not need that high a percentage, but there should be a clear designation of adequate funds to do the job!

6. Plan research carefully. There are a number of ways that institutional research influences institutional management. Since studies often require data from several sources, careful planning will save time as well as other resources.

7. Seek broad faculty participation. Faculty should not only participate through their advisory group activities but also suggest studies and take an active role in collecting and interpreting data. Time off and other encouragement to participate should be available.

8. Provide expert help when needed. No faculty includes expertise in every possible area. Use of outside experts will not only enhance the study but will assure possible comparability and shared position.

9. Seek inter-institutional cooperation. One of the most important factors in Florida is the organization of the Inter-Institutuional Research Council, a consortium of community colleges and the University of Florida for the purpose of cooperative research.
10. Establish a complete and adequate record-keeping and filing process. The problem of record keeping is a difficult one. Procedures can be established, however, which will assure both accuracy and completeness. A cross-reference system will be invaluable.
11. Provide adequate recognition. Faculty who conduct studies obviously need the support of the institutional research office. There needs to be a specific program of recognition provided to those who complete studies.
12. Establish a procedure for dissemination and discussion of findings. Shelving a study is all too often the final result. Concern for follow-through is an important part of the study design.
13. Use the findings in improving the institution. Direct use of the findings will be the most important outcome. If this step is not taken, resources will be wasted.
14. Provide empathetic support from the president of the institution. Research has repeatedly emphasized the need for top-level support. Institutional research has failed its

mission in those colleges which do not have clear support from the president.

These guidelines provide a basis for the development of an institutional reearch program in a community college. The implementation of them will require both commitment and planning, individually and institutionally.

REFERENCE

1. Roueche, John E., & Boggs, John R. Junior College institutional research - the state of the art. Washington, D.C.: American Assoc. of Junior Colleges, 1968.

THE RANGE AND ORGANIZATION OF DATA FOR RESEARCH

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Emerging research trends in the two-year colleges indicate that three major developments are now beginning to take place. These developments have come about primarily in response to a need for aid in decision making and have closely paralleled the increased emphasis on accountability that has become the hallmark of the seventies. Perhaps the most significant development is a new emphasis on applied rather than theoretical research, which has led to an increase in useable rather than abstract models. The steady increase in the number of research projects devoted to specific problems rather than investigation in general clearly reflects this shift in emphasis.

A second development is the redefinition of functional objectives in institutional research. The focus is now shifting to such matters as enrollment projections, outcomes in career programs, economics impacts (of the college on the community), cost effectiveness, administrative organization, institutional goals, college governance, instructional effectiveness, community needs, and many related topics. No longer do studies that merely tabulate student characteristics fulfill the information needs of potential users. Needed now are studies that concentrate on specific areas and individual needs rather than general student characteristics. In addition, surveys are now required to determine the educational needs of particular segments of the population such as rural and urban groups, ethnic minorities, elderly citizens, and women.

Finally, institutional research has become more sensitive to the need for empirical information as to whether the community college meets the expectations of the community and legislative agencies. A premium is placed on information related to the quality of impacts produced _by_ the college as contrasted to those imposed _on_ it by the individuals and groups using its services. This development is clearly reflected in the number of recent studies conducted to determine student outcomes in the educational process.

Research Conceptualized

Given this emphasis on the practical aspects of research and the information needs of faculty and administrators, we can define research as a process designed to assist institutions in: (1) defining goals and purposes; (2) identifying programs and policies that meet these goals; (3) evaluating programs to see if they are doing what the institution says they are supposed to do; and (4) mapping the flow of resources to determine the cost effectiveness of college programs.

There are many sources of data, ranging from the expressed needs of community subgroups to the published requirements of state agencies. The value of such resources for a particular organization, however, depends on the efforts of many to collect, organize, and apply the data in the decision-making process. At its best, research data is a constructive tool for management to use in making key decisions; at its worst, it is a useful adjunct to the decision-making process--often just window dressing for decisions that have already been made.

If we were to choose which role we want research to play, most of us would probably select the more constructive role. We would say that to be effective research should have a direct effect on decisions concerning institutional goals and purposes and should also affect the methods by which these decisions are made--that is, alter the structure of the decision-making process. For research to have such an effect on decision making, it must meet three essential conditions. First, it should help faculty and administrators establish institutional goals and objectives; second, it should play an integral part in planning; and, third, it should provide the means for appraisal of institutional programs and activities in relation to stated goals (evaluation).

There are several assumptions upon which these conditions are based:

- Facing an uncertain future, administrators are sensitive to the need for research to assist in the formulation (or modification) of institutional goals.
- Research, as an integral part of the decision-making process, should both precede and follow the establishment of institutional goals.
- Research, as a pivotal element in goal-setting, should play a key role in planning for the long-range development of the institution.
- A recognized apparatus exists in every institution for the conversion of research findings into planning concepts and decision alternatives.
- Comprehensive data systems, once organized, will be used by faculty and administrators to guide the further development of the institution through variable internal and external conditions.

If we can accept these conditions and assumptions, then a conceptual foundation for research will have been established and a system designed for its organization into data fields.

The Organization of Data

Figure 1 on page 14 is a diagram of the conceptual model just described. This model identifies four subsystems in research: goal-setting, program development, cost effectiveness, and program review. Each subsystem has a distinctive relationship to planning and decision making, and each has component data fields that identify and organize information into subject categories. These data fields are: students, programs, community, facilities, finance, staff, and organization.

All seven of the data fields operate in each subsystem but do so primarily in accord with their relationship to the sequence of activities in the institution. For example, data that relate to goal setting typically involve the nature of the community to be served and are collected early in the life of the institution. Data related to program development are needed at a later stage in the institution's development for market analyses and community need surveys to identify the types of programs that should be offered. And, finally, highly specific data related to the cost effectiveness and program review subsystems are designed to describe the outcomes and costs of college programs and relate them to the goals of the institution.

Before discussing in greater detail management's use of research data for planning and decision making, let us consider

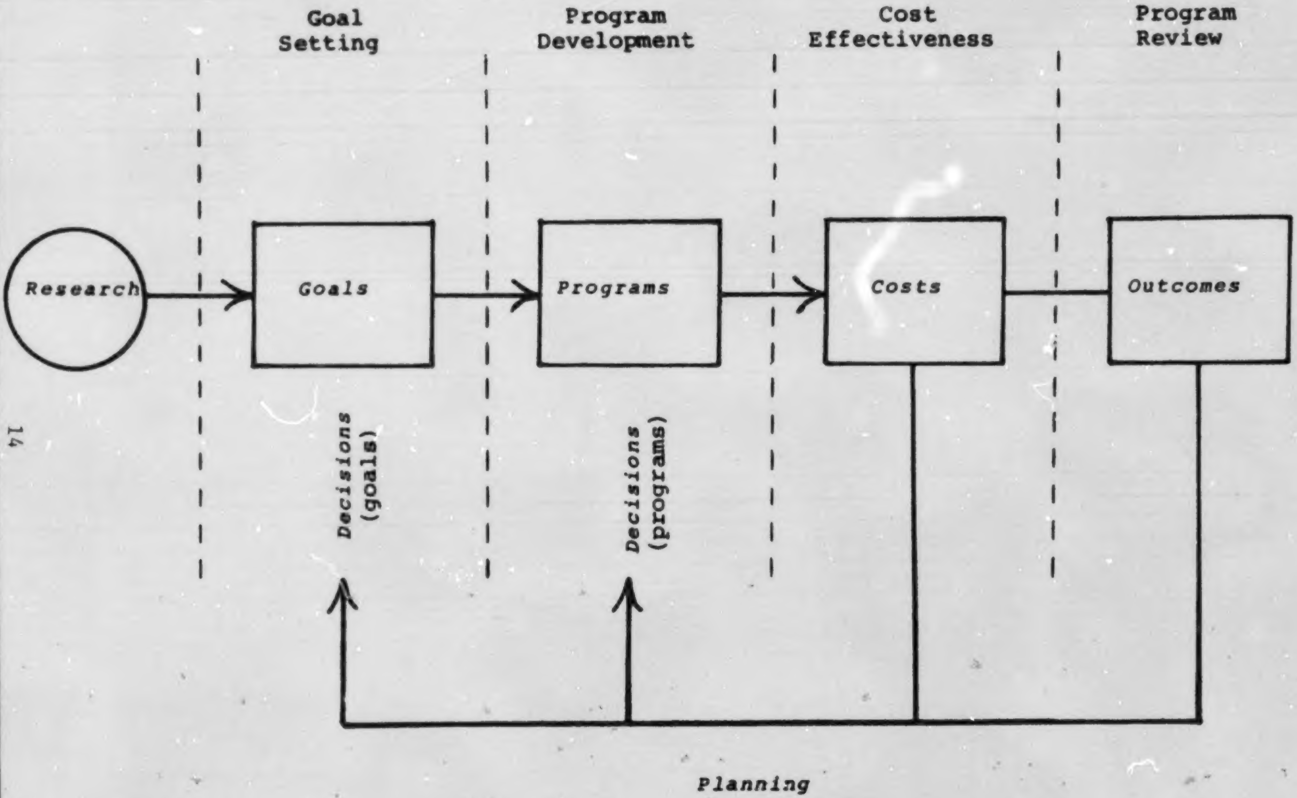
Goal Setting
Program Development
Cost Effectiveness
Program Review
Research
Goals
Programs
Costs
Outcomes
Decisions (goals)
Decisions (programs)
Planning

Figure 1. Conceptual Model for Research

briefly the four subsystems and the types of data that are incorporated into each.

Goal Setting: Most two-year colleges develop a general set of goals based on a philosophy formulated at an early point in their development. Such goals receive little attention except in relation to visits from regional accrediting associations when an attempt is made to relate them to descriptive data collected after the fact to demonstrate that the goals are indeed being met. Unfortunately, these goals normally are not defined in such a way as to make them effective in guiding institutional development. Neither do they receive the regular review and evaluation by faculty and admininstrators that could make them a vital force in management.

Every institution should collect data that can become a source of direction for determining the types of goals it should pursue. It is not enough for a college to commit itself to offering career programs simply because this is a goal normally pursued by a comprehensive community college. Ideally this goal should be determined in accord with data describing regional and local needs for career programs. It should be phrased in terms of the total percentage of enrollment to be served by such programs, the relationship of these programs to manpower needs of the community, and the actual number of positions to be filled by program graduates. In a similar fashion, a goal concerning guidance services should identify through research the kinds of needs students have for such services as well as the anticipated results. Obviously, the formulation of goals based on research data will not be easy in many areas, but the effort must be made if goals are to serve as a yardstick for institutional development.

The following areas of **concern in the goal-setting subsystem** need to be addressed by community college research:

Community

(1) Studies of the geographical characteristics of the college service region

- size (in square miles)
- distribution of population
- zoning characteristics of region
- natural barriers to campus development

(2) Studies of the demographic characteristics of the college service region

- population density
- population composition
    - age
    - sex
    - level of education
    - race and ethnic group
    - occupational status
    - family income
    - dwelling units
- in/out migration (population growth)
- transportation facilities

(3) Economic studies

- number and types of business and industrial installations
- manpower distribution (by occupation)
- regional projections for manpower needs (by occupation)
- rate of unemployment
- percentage of population employed in "growth" and "no growth" occupations

(4) Studies of postsecondary institutions and programs

  - number and types of postsecondary institutions in service region
  - number and types of postsecondary institutions in areas outside service region
  - career and general education program offerings in postsecondary institutions
  - community service and continuing education offerings in postsecondary institutions
  - articulation policies and procedures

(5) Studies of individual and group perceptions of college goals

  - Delphi technique
  - Institutional Goals Inventory
  - other standardized instruments
  - community needs surveys
  - other

(6) Studies of state and regional statutes regulating institutional goals.

Program Development: Organizing for effective programs requires a total conceptual framework beginning with a stated mission and ending with a systematic approach to evaluation. This procedure requires a market analysis of community educational needs which must be met through the development of programs operated in support of stated goals.

Numerous market analysis models are available, but they are all based on the general assumption that educational programs should both follow and support the educational needs of the community. Figure 2 on page 18 depicts the various steps in a market analysis.

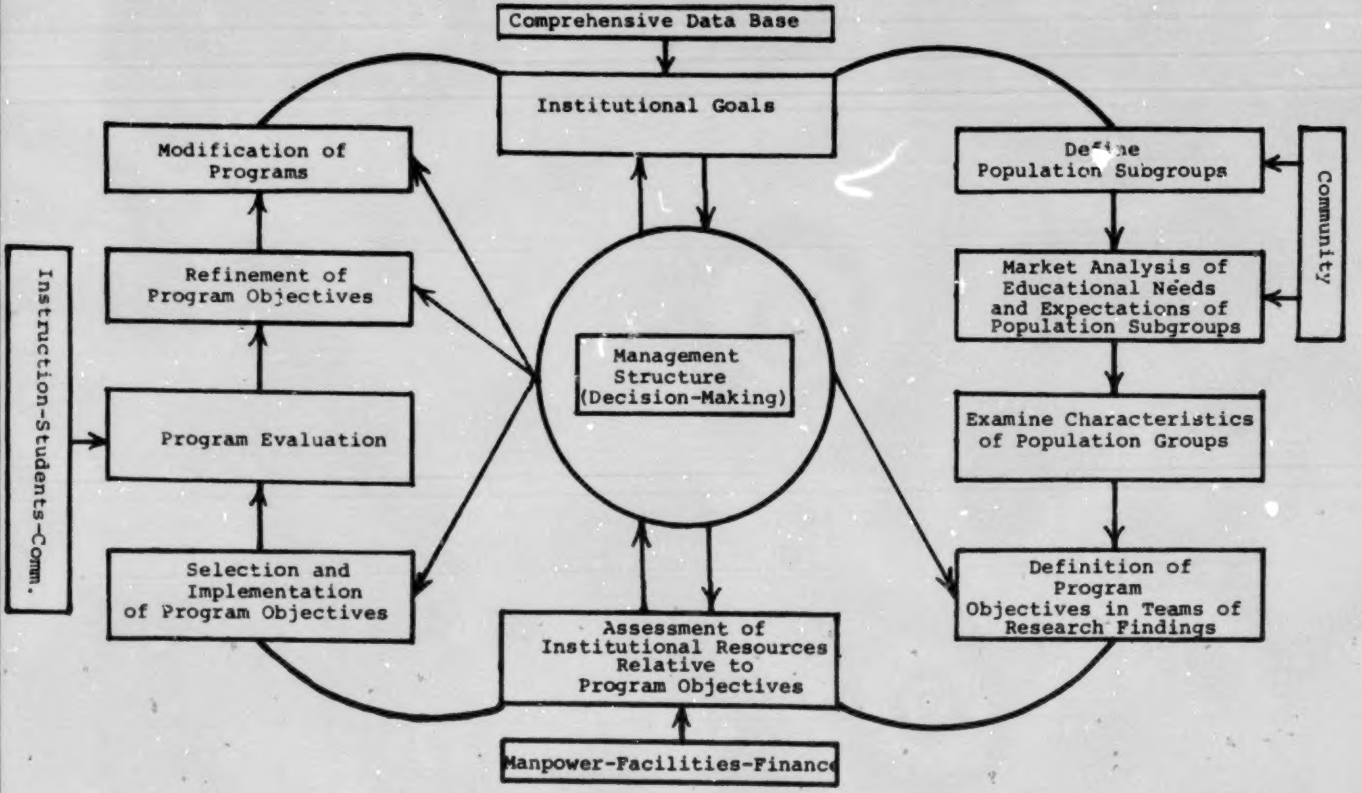
Comprehensive Data Base
Institutional Goals
Modification of Programs
Refinement of Program Objectives
Program Evaluation
Selection and Implementation of Program Objectives
Instruction-Students-Comm.
Management Structure (Decision-Making)
Define Population Subgroups
Community
Market Analysis of Educational Needs and Expectations of Population Subgroups
Examine Characteristics of Population Groups
Definition of Program Objectives in Teams of Research Findings
Assessment of Institutional Resources Relative to Program Objectives
Manpower-Facilities-Financ

Figure 2. Market Analysis Model

In every metropolitan region in the United States, census data are available that describe the population in terms of characteristics such as age, sex, race, ethnic group, veteran status, occupational status, family income, education level, and unemployment. Program objectives should follow market projections of community need and should be stated in concrete performance terms. They should define the types of population subgroups to be served, the types of needs that have been identified, and the types of programs to be offered.

The development of program objectives that reflect research on community needs carries forward the process through which the institution's programs are created. If they are properly stated, objectives can enable faculty and administrators to appraise programs according to their use of current resources and measure their effectiveness against a series of short- and long-range planning yardsticks. The types of research currently being collected in this area can be summarized as follows:

Community

(1) Studies of educational needs and characteristics of out-of-school citizens (18 years and older)

(2) Studies of educational needs and characteristics of secondary-level students

(3) Studies of local employer needs and perceptions

(4) Projections of manpower needs by civic agencies

(5) State and federal projections of manpower needs

Programs

(1) Appraisals of state and regional regulations affecting program development

(2) Studies of program offerings in other postsecondary institutions

Students

(1) Enrollment projections

- institution
- division
- department
- course
- section

(2) Studies of educational needs and characteristics of enrolled students

(3) Studies of student transfer rates between postsecondary institutions

Finance

(1) Projections of program costs

(2) Projections of revenues generated by programs

Facilities

(1) Projections of amount of space required by programs (square footage)

(2) Projections of type of space required by programs (laboratory, lecture, office, and so forth)

Staff

(1) Projections of staffing requirements of programs

Program Review: The third subsystem in institutional research is the "program review" or what is commonly known in educational jargon as "evaluation." This subsystem is perhaps the single most routinely examined area in community college research today. Studies of student attrition, grade distributions, employer follow-up surveys, student perceptions, graduation rates, transfer performance, and so forther, are good examples of the kinds of research done in this area. The focus is on student outcomes, and the methods that are used are as diverse as the research itself. The best way to describe the subsystem is through a diagram of the relationship of outcomes to program structure in the community college.

In theory, programs consist of a series of activities designed to move students from one status to another. A model developed by Astin uses the concept of "outputs" to describe the progress of students in relationship to programs. In this model, the background characteristics of entering students, the objectives of the program, and description measures of the college environment are considered "input" (see Figure 3, page 22). Theoretically, an "expected" output can be computed at any time in the life of a program based on these input characteristics, and the effect can be statistically removed from "observed" outputs (actual scores on the variable or variables under investigation) producing a "residual" output, which is independent of the input characteristics. Measures of the characteristics of the college and the program can then be related to this residual output to appraise the functioning of the program. This process culminates in the formation of evaluation

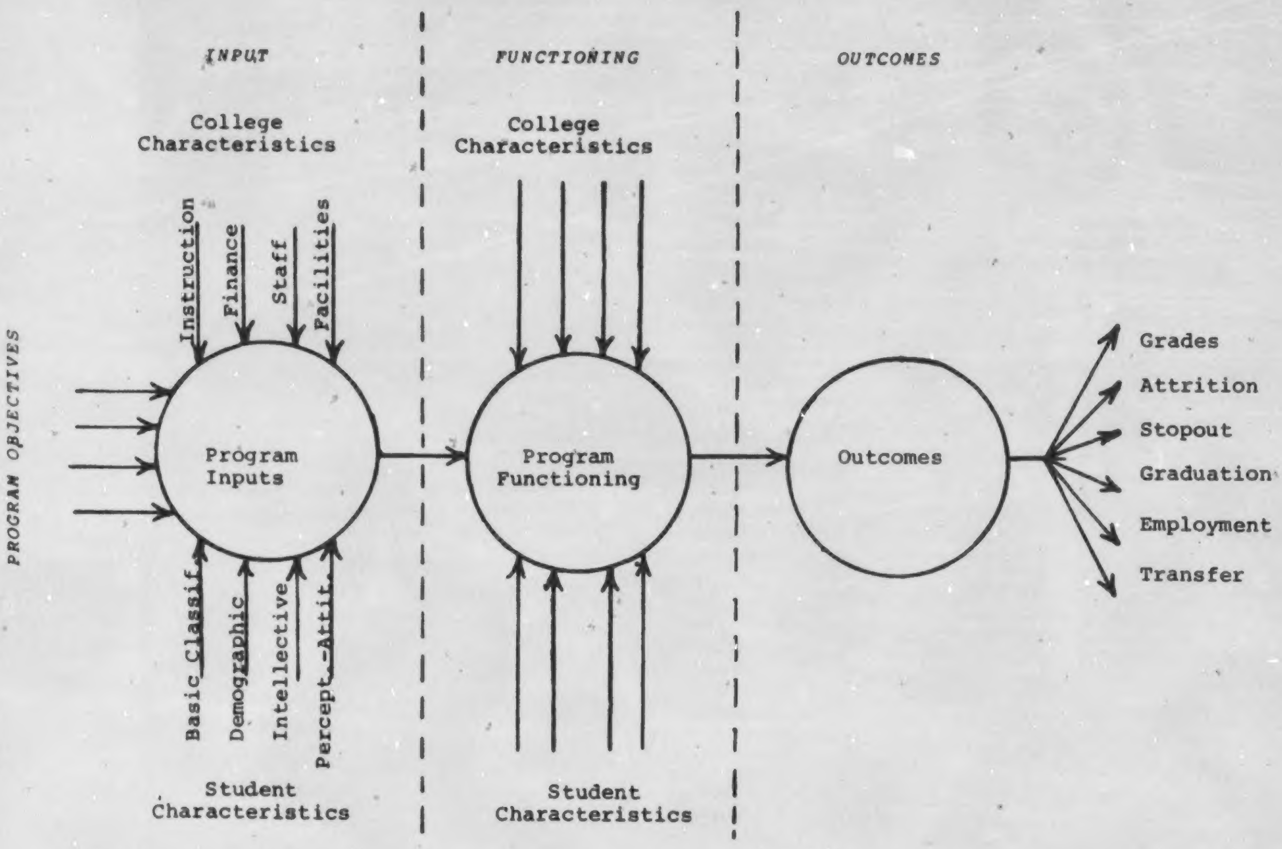
INPUT
FUNCTIONING
OUTCOMES
College Characteristics
College Characteristics
Instruction
Finance
Staff
Facilities
PROGRAM OBJECTIVES
Program Inputs
Program Functioning
Outcomes
Grades
Attrition
Stopout
Graduation
Employment
Transfer
Basic Classif.
Demographic
Intellective
Percept.-Attit.
Student Characteristics
Student Characteristics

Figure 3. Input-Output Model of Program Functioning

measures which describe program functioning in terms of student outcomes as well as the effectiveness of the program in producing conditions which lead to outcomes.

Programs can be measured at three different intervals: at the time of initial student enrollment (input); during the period of enrollment (functioning); and after termination of study (output). This progression is reflected in the studies commonly conducted in the area:

Organization

(1) Studies of the climate and characteristics of the institution

Programs

(1) Studies of the objectives and characteristics of college programs

- objectives
- courses
- staff
- facilities
- instructional methods
- instructional resources
- budget
- other

Students

(1) Studies of the characteristics of enrolled students

- basic classification
- demographic

- intellective
- perceptual-attitudinal

(2) Studies of grade distributions (summaries and comparisons)

(3) Studies of the characteristics of graduating students

(4) Student attrition studies

- number and characteristics of students
- credit attrition (course withdrawal)
- college attrition (withdrawal from college)

(5) Research on stopouts

(6) Studies on transfer students (number and destination of transfers, credits accepted, and so forth)

(7) Transfer follow-up studies (academic achievement of transfer students in subsequent institutions)

(8) Studies of certification/licensure results (student scores on required examinations for career entry)

(9) Research on further educational degrees obtained by students

(10) Research on employment patterns of students (number of students permanently employed by type of employment)

(11) Research on employer evaluations of student preparedness and job performance

(12) Research on student perceptions of college

- of curriculum (career and transfer preparation)
- of faculty and staff
- of campus life
- other

Community

(1) economic impacts of the college on the community

Cost Effectiveness: The fourth subsystem in institutional research responds to the need of community college planners for a gross quantitative measure of the cost effectiveness of present programs and for an estimate of the major consequences of decision alternatives. Since only enrollment-based information currently meets the criterion of credibility, cost effectiveness analyses have been limited to data which examine only the quantity of output. At most, this type of analysis produces a unit cost for each operation and should more appropriately be labeled "cost analysis."

Some of the studies that have been conducted in this area, when taken together, provide the ingredients of a unit cost:

Students

(1) enrollment analyses

- units of analysis
    headcount
    FTE
    credit hours
    weekly student contact hours
    other
- levels of analysis
    college
    division
    department
    course
    section

Staff

(1) Studies of faculty load (allocation of time to programs and functions)

(2) Studies of staff salaries and fringe benefits

Finance

(1) Studies of supply costs

Facilities

(1) Research on facilities utilization

(2) Studies of energy costs

Specialized Research Studies: The final subsystem for research is made up of studies conducted in response to special needs identified by the institution or its constituencies. Often designed to collect data defined in previous subsystems but for different reasons, this subsystem would include the following kinds of studies:

(1) institutional (or campus) feasibility studies

(2) bond issue and levy election studies

(3) annexation studies (of school districts)

(4) institutional self-studies

(5) collective bargaining studies

(6) trustee subdistricting studies

(7) other studies as may be mandated by emerging issues

Although this list is only partial, it does depict the relationship of these studies to emerging issues in community college education.

Planning and Decision Making

The translation of research data into planning concepts and decision alternatives is the crux of the research enterprise. Management decisions do not simply follow from the existence of research data. Whether at the two-year or four-year college, there are persistent problems. First and foremost, and for many reasons, there is a need to increase management's awareness of the value of converting research data--past, present, and future--into planning concepts. Once data on program outcomes are in hand, management guidelines are necessary for their translation into planning alternatives. This involves system-wide priorities and requires that administrators maintain some form of decision apparatus for the conversion of data into action.

Many administrators have failed to attend to this need and have lapsed into lethargy upon realizing that they must assume a leadership role if planning is to be successful. The absence of a decision-making apparatus allows the accumulation of a hard core of unanswered questions that plague the educational planner: What are the uses of research data in community colleges? What procedures should be used for the conversion of data into planning? Who should be responsible for assessing the implications of various data trends and advising management of decision alternatives? What is an appropriate balance between politics and research in the planning process? How can research data be used to "improve" management decisions? What is the value of planning in an institution in which political concerns often override planning alternatives? Questions such as these must be answered if two-year colleges are to conduct meaningful research programs.

Figure 4 on page 28 presents a decision model that depicts the environment for converting research findings into planning concepts. The reader will immediately recognize in this schema the potential for conflict in competing staff interests--a situation that has

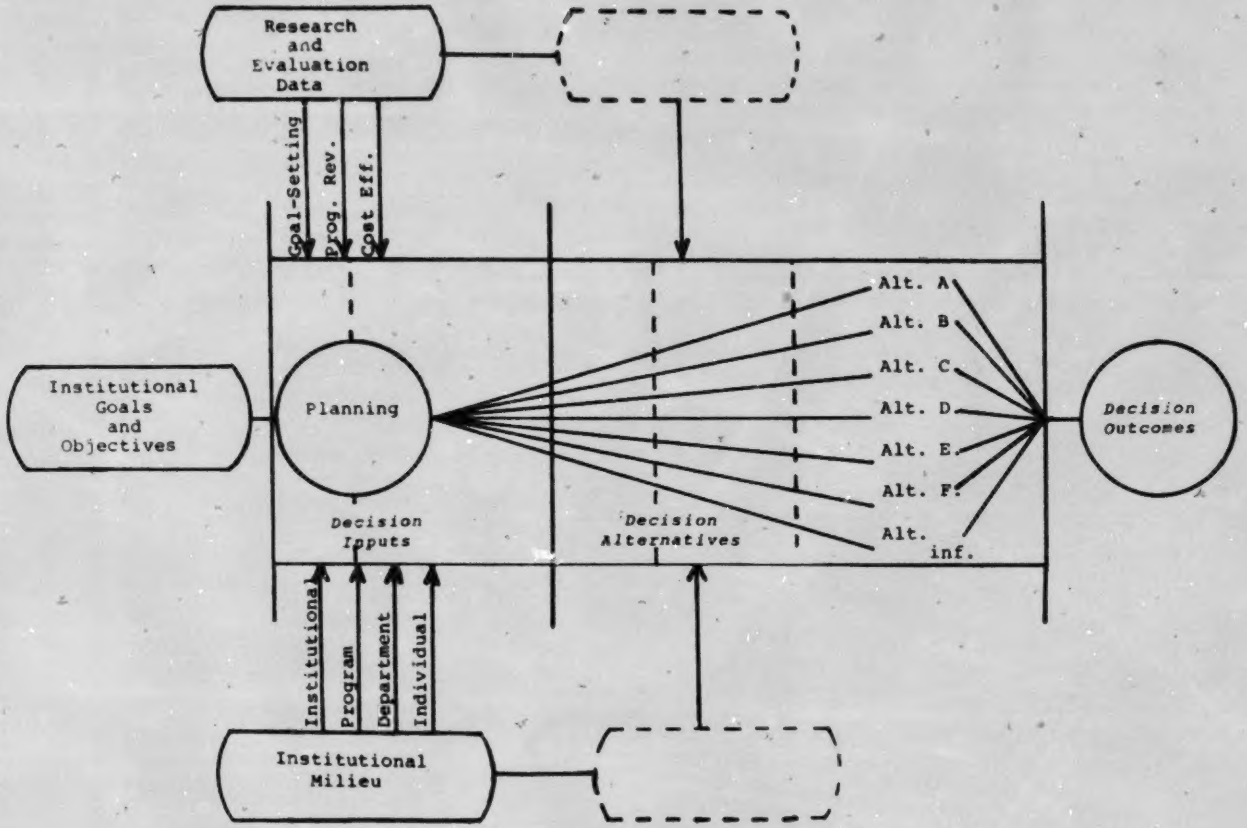
Research and Evaluation Data
Goal-Setting
Prog. Rev.
Cost Eff.
Institutional Goals and Objectives
Planning
Decision Inputs
Decision Alternatives
Alt. A
Alt. B
Alt. C
Alt. D
Alt. E
Alt. F
Alt. inf.
Decision Outcomes
Institutional
Program
Department
Individual
Institutional Milieu

Figure 4. Graduated Decision-Making Model

proven so dysfunctional for community colleges. Ideally, planning should be a graduated process that involves making decisions that strike an even balance between political considerations on the one hand and research data on the other. Too often, however, political expediency has been the dominant force in decision making and research has been a superficial adjunct to the process. This situation is most evident in the tendency of administrators to manipulate research findings to fit a framework congruent with their value expectations when they make decisions affecting the direction of the institution.

Institutional constituencies, depending upon their numerical size and internal cohesiveness, bring different value perspectives to the decision-making process. To the extent that these value perspectives are identified and understood, research can be effective as a guide to institutional development. By presenting faculty and administrators with different alternatives based on research findings, the research model can be used to forge decisions regarding long-range development. Using available data in combination with stated institutional goals and staff input, decision alternatives can be constructed. These alternatives can range from a purely political solution to a data-based approach to long-range planning. The solution is likely to lie somewhere in the middle, but the task of identifying potential alternatives is in itself sufficient to point faculty and administrators in the direction of planning.

In the absence of a decision-making apparatus to convert research data into planning concepts, research is fragmented. This results in a pattern of vested interests that lacks credibility as an objective base for planning. A decision model should be developed that is sensitive to the political climate in which an institution functions as well as flexible enough to allow time for the development of decision alternatives. It should not be assumed that the values and interests of college constituencies will always be compatible with research data, but administrators will ultimately be able to achieve consensus if they are given accurate and meaningful information.

RESEARCH METHODS AND STATISTICAL ANALYSES FOR DEVELOPING PROFESSIONALS IN INSTITUTIONAL RESEARCH

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In exploring the methods and techniques used in effective institutional research programs, we might consider some of the thoughts of Paul Dressel(7), one of the country's leading institutional researchers. Dressel states that "the basic purpose of institutional research is to probe deeply into the workings of an institution for evidence of weakness or flaws which interfere with the attainment of its purposes or which utilize an undue amount of resources in so doing. In the search for flaws, no function, individual, or unit should be regarded as off-limits. In the process of searching, evidence of effective and, perhaps, excellent functioning can and should be produced, but perfection is unlikely to be found and improvement is always possible.

In carrying out this process, what is the grist for the mill? Dressel sees three main subjects--the environment, which includes the individual constituencies on the campus, i.e. students, faculty, administrators, plus facilities, and, in the case of the community college, the community.

The second subject of institutional research--the processes and operations of the institution--includes a great many items which essentially reflect the administration of the institution. The three main ones are: 1. Student Personnel Services including such subgroups as admissions, counseling, and financial aid; 2. Curriculum and Instruction including such items as grading, course proliferation, and class size; 3. Business Operation. Dressel readily acknowledges that "institutional research personnel can seldom deal effectively with them unless they have impinged rather directly on the academic program and have become a source of concern or complaint from academic units." This situation is prevalent at my institution, and I see it at many others. IR simply does not mess with the Business Office.

Another subject of institutional research, Ultimate Outcomes, should be distinguished from immediate outcomes such as degrees and certificates. Most IR offices deal with immediate outcomes. Immediate follow-up studies are common. Long-range follow-up studies may result in additional insight into ultimate outcomes. A few of us have been able to assess the impact of our graduates on society, assuming that such an impact is related to their experiences at our institution.

We have stated the basic purpose of IR and have identified its subject matter, as perceived by Paul Dressel. In the time remaining, perhaps it would be best to express some concerns about IR and community colleges, cite some useful references for research methods and statistical analyses, and tie them to some of the projects at Harrisburg Area Community College.

There is a serious question as to the quality of research in community colleges. Dr. Cohen's comments in A Constant Variable(4) are relevant. In reference to research personnel at junior colleges, he wrote that "they are frequently inexperienced in the use of standard methodologies and while they are learning them, the methodologies themselves are being questioned." A good example of this is a brief paper entitled "College Education for Young Criminals Pays Off." The title reveals the sophistication or lack thereof of the individual who carried out the study. The report describes a study of young men at a correctional institution in Pennsylvania pursuing courses given by a community college. The experimental group consisted of prisoners who were taking the college-level courses. The control group was a random selection of prisoners who were not taking the courses either by choice or because they had been screened out of the program. The investigator was able to come up with several differences in favor of the experimental group.

The design of this study is grossly inadequate and cannot be considered even quasi-experimental. There is a considerable amount of screening before an individual is permitted into a college program at most penal institutions, especially the one being studied. Thus, the creme de la creme of the prison population is in the college program.

A brief appendix to the study indicates a gross lack of control. The average IQ of the noncollege group was 98.2. The average IQ of the college group was 107.7. The average standard achievement test guide to the noncollege group was 6.3. The average standard achievement test grade of the college group was 8.5. The point is, the so-called experiment was loaded in favor of the experimental group. However, even with such a heavy loading, there are only nominal differences between the two groups. The investigator states, "an important factor in the success rate appeared to be the growth of a positive attitudinal change as induced through their own recognition of having latent talents which hitherto had been submerged within the realms of their previous criminalistic experiences." It is this type of verbiage and lack of understanding of research which does harm not simply to the individuals immediately involved but to the entire field of higher education.

According to Dr. Cohen, "the constraints are characterized by the following concerns by directors of institutional studies: 1. the only advantage to being a research officer on some campuses is to attend conferences and workshops; 2. the major function of some research officers is to write grant proposals, answer questionnaires, and reply to requests for data; 3. some administrators try to torpedo studies because they feel studies interfere with their authority; 4. sampling techniques can sometimes not be used because a higher authority does not trust samples and insists on using the total population; 5. some administrators grant permission for studies only if they are safe or will not have unpleasant repercussions; 6. members of accreditation teams sometimes feel changes are too liberal, even if they are supported with data; 7. data are often either misinterpreted or not used; and 8. if reports of studies are not reduced to two pages, it is unlikely anyone will read them."

Some Useful References

There are several references which you may find of considerable use. In the area of statistics, there are many good texts. I find it helpful to use ones that follow a decision map. The Survey Research Center at the University of Michigan publishes A Guide for Selecting Statistical Techniques for Analyzing Social Science Data(3).

Another very useful text is *Introductory Statistics, A Decision Map*(11). This text is now just coming out in a second edition which I have yet to review. Of course, there are other texts on statistics, but these help you to identify the right test quickly.

Probably the best overall text to introduce anyone to the field of research in the social sciences and education is Fred Kerlinger's *Foundations of Behavioral Research: Educational and Psychological Inquiries* (Holt, Rinehart & Winston, New York, 1964). This type of text will give you a good introduction to the field of research methods without overwhelming you.

The *Handbook of Research on Teaching*(9) published by the American Educational Research Association goes beyond Kerlinger into a narrower, more detailed field of research, teaching. The text as a whole is a monumental document, but one chapter, "Experimental and Quasi-Experimental Design for Research on Teaching" by Campbell and Stanley, is an outstanding piece of work which should be read thoroughly by any institutional researcher. The logic and design laid out in a simple chapter (which has been published separately) helps to orient the researcher to avoid the pitfalls of reports like *College Education for Young Criminals Pays Off*. This work by Campbell and Stanley is the basis for many other texts dealing with research design and is constantly referred to.

Another excellent reference only recently published is the *Encyclopedia of Educational Evaluation*(1).Its primary authors include Anderson, Ball, and Murphy from Educational Testing Service. In their preface, the authors take a critical look at the field:

"We do not claim to be completely objective. Rather early in the development of the book we decided quite deliberately to let some of our values and viewpoints show. Thus, the reader will discern, among other things, that we prefer objective evidence over testimony; insist that measurement and evaluation, even though they are closely linked, are not the same thing; favor minimizing the jargon of evaluation and highlighting its conceptual underpinnings; respect good experimental and quasi-experimental designs for evaluation studies, and believe the failure to use good design is sometimes as much a matter of poor thinking as it is of practical pressures; place a high value on the construct validity of measures; feel that a great deal needs to be done about improving the climate for and support of evaluation studies; want to substitute considered analyses for the mystiques that seem to be growing around such concepts as accountability and criterion-referenced testing; and think that the common aspects of education and training should be emphasized rather than the distinctions." Their work succinctly summarizes many items which are often glossed over or are not clear in texts on statistics and methods.

There are several texts dealing with evaluation which would be well worth your review. Suchman(23) and Stufflebeam(22) will give you background in evaluation theory. Wentling and Lawson(27) provide a guide to evaluating programs. Lipton(16) and Struening and Gutentag(21) offer volumes which give examples of substantial applications of the abstract concepts involved in evaluations.

Sampling is crucial to studies if we are to draw valid inferences from the data. Many studies fail to recognize the limitations of samples and/or have a totally invalid sample for the purpose of the study. Seymour Sudman has recently published Applied Sampling(24), which is a bridge to understanding sampling theory and methods for the less mathematically inclined investigator. His other texts, Reducing the Cost of Surveys(25) and Response Effects in Surveys(26), should also be helpful for designing studies involving samples.

As community college researchers, we are not usually involved in highly technical research. Instead, we are dealing with immediate practical problems. There are some handy references to help us chart our way through a problem. The following four are good: 1. Professional Mail Surveys(8) can help you organize your approach to mail surveys, which community college researchers use to meet the demand for follow-up information; 2. Evaluation in Education: A Practitioner's Guide(10) is another text with an applied orientation, this time in terms of the assessment of instruction; 3. Practical Research: Planning and Design(15) gives you a good overview of laying out and following through on research studies of many types; and, 4. one of the most comprehensive and helpful little books is the Handbook in Research and Evaluation(12). In a chapter entitled "A Guide to Research Designs, Methods and Strategies," the authors discussed nine research methods which would be useful to review here.

Some Research Methods

The purpose of the historical method is to "reconstruct the past objectively and accurately, often in relation to the tenability of a hypothesis." We may occasionally become involved in this type of research in looking at trends to help guide us in projections.

The *descriptive* method is meant to "describe systematically a situation or area of interest factually and accurately." Examples would include population census studies, public opinion surveys, and some follow-up studies.

The purpose of the *developmental* method is "to investigate patterns and sequences of growth and/or change as a function of time." An example of this would be a trend study projecting the future growth and educational needs of the community from past trends and recent building estimates.

Researchers use the *case and field* method "to study intensively the background, current status, and environmental interactions of a given social unit: an individual, group, institution, or community." Case studies are useful for getting into an area of concern, but seldom lead to conclusive results. One pitfall for researchers is the selection of a unit to bias the results in the desired direction.

The *correlation* method is used "to investigate the extent to which variations in one factor correspond to variations in one or more other factors based on correlation coefficients." An example would be a study to predict success in college based on correlations of college grades and selected variables such as age and high school rank in class. Kerlinger and Pedhazur's(14) text on regression analyses will be helpful if you pursue this method.

The *causal-comparative* or *ex-post-facto* method is used to "investigate possible cause-and-effect relationships by observing some existing consequences and searching back through the data for plausible causal factors." For example, this method can be used to identify factors related to dropout problems in a particular college, using data from records over the past 10 years.

In the *true experimental* method, the researcher attempts "to investigate possible cause-and-effect relationships by exposing one or more experimental groups to one or more treatment conditions and comparing results to one or more control groups not receiving the treatment (random assignment being essential)." In a college setting, for example, researchers might examine the effectiveness of three methods of teaching reading to developmental students, using random assignment of students and teachers to methods.

With *quasi-experimental* methods, the purpose is "to approximate conditions of the true experiment in a setting which does not allow the control and/or manipulation of all relevant variables. The researcher must clearly understand what compromises exist in the internal and external validity of this design and proceed with these limitations."

Finally, we have the *action* method of research. The purpose here is "to develop new skills and/or approaches and to solve problems with their application to classroom or other applied settings." In short, we may work in an area without a tight design, recognizing the limitations of any data while generally building toward a better design.

Research Methods at a Community College

Descriptive Method: At Harrisburg Area Community College, we have undertaken a rather ambitious descriptive research project--a community educational needs assessment (CENA). This project is a key component of a five-year master plan we are currently developing at the college. The results of the study will provide information to other components including staffing parameters, enrollment parameters, new curricula, facilities, and the fiscal plan. The key point here is that descriptive research can be quite useful, indeed crucial, to sound planning.

The study includes a survey of a stratified random sample of the 30 high schools in our three-county service area as well as a survey of the population at three area vocational-technical schools. The design of the survey will permit us to extrapolate the educational and occupational plans of tenth, eleventh, and twelfth graders throughout our service area. The data should permit us to identify new curricula, especially those which could be serviced jointly by the college and the area vocational high schools. These curricula would result in more post-secondary offerings without any increase in staff or facilities. It may also be possible to identify marginal programs which we could start phasing out.

The second component of our study is a survey of adults in our service area. We are identifying what, when, where, and to some extent how individuals might receive noncredit adult classes and/or regular college-credit programs. We are doing general samples of 500 in each of the three counties and subsamples in population concentrations where extension services may be offered. We will be doing a mail survey of the adults as opposed to on-site surveys of the high school students. Mail surveys can be a tenuous business, but we've enjoyed excellent community support in the past and anticipate the same in the future.

The final component of our study is a survey of the business community. This will be a mail survey identifying their training/education needs and their willingness to assist their employees in obtaining such training by outside instruction, tuition support, released time, and so on.

Developmental Method: Often, descriptive research may turn into developmental research. In 1972, for example, we did a rather extensive study entitled Student Services: An Evaluation(18). Now, in 1976, as our institution comes up for a Middle State reaccreditation, we have just replicated the study. (Any time you do a descriptive study, consider the possibility of replicating it. Consider this in the design of the study. I should point out a bias of mine: I like to see replication of a study and/or a cross-validation procedure if appropriate. Statistical significance is not always replicated. Replication is a good way of checking conclusions.)

When this study was initially done, I was given the responsibility for evaluating our Student Personnel Services to find out where all the money was going and whether the services to students were effective. As I approached the problem, I found that there was little in the way of hard data to assess the performance of the Student Personnel Services operation. One could, however, try to identify some face validity of effectivenss of the various operations, finding out how various constituencies on campus felt about services to students.

Rather than create our own structure, we chose to develop an instrument along the lines of the criteria developed by McConnell(17) in Junior College Student Personnel Programs: Appraisal and Development. It should be noted that similar types of instruments were developed over this same time at several different locations, all relating back to this document. We surveyed the administrators, faculty, student services staff, and, of course, the students. We asked them to assess the importance of various Student Personnel functions and the performance of the institution in carrying out these functions. We did not limit ourselves to the criteria identified by McConnell, but added a section to each of the surveys trying to take a closer look at particular questions in our own institution especially the structure of counseling services and faculty advisors. What was in 1972 a descriptive survey and in 1976 another descriptive survey has become a developmental research project.

Case and Field Method: This approach is one we occasionally use. I would classify our study of The Impact of the College on the Local Economy(20) as a case approach in that we did a rather intensive study of the institution and its relationship to the community. Studies like this one may give you greater insight into the service area and the operation of your institution.

Correlation as a Method: We've all heard of the idea of trying to predict success in colleges by using correlation research or regression analysis. At HACC, we have used this method of analysis as part of a two-fold study of Accounting 101. First, we used correlation analyses and regression analyses to study student characteristics, and then we used quasi-experimental techniques to study instructional methods in accounting. The study of student characteristics in Accounting 101 was prompted by the fact that a large percentage of students did not earn satisfactory grades (A, B, or C). Knowledge of what factors contributed to success or failure might provide a basis for changes in such things as sectioning, prerequisites, or guidance procedures. We were also looking for factors which might have a bearing on the design of experiments on instructional approaches.

We surveyed fall enrollments in Accounting 101 in 1971 to gather data which could be used with the data we already had on file to run a regression analysis with student final grade as the criterion variable. The variables we used were *sex*, *veteran's status*, *high school curriculum*, *high school bookkeeping*, *high school accounting*, *high school rank*, *Accounting 100 previously* and *Accounting 101 previously*, *a bookkeeping job*, *an Accounting job*, *total credits*, *age*, *hours worked during the school term*, and *each of the ACT scores* (including the composite).

The analysis of all full-time students resulted in a maximum multiple R of 0.53, which means the variables could account for 28 percent of the variance in final grades. The *ACT composite score* was the first variable to be entered and had the highest correlation (.271) with *final grade*, the criterion variable. *Age* was the second variable entered and had a similar correlation with final grade.

The point is we can tease out these variables which may have some impact on success of the individual student.

The standard error of estimate of a predicted grade was approximately 1.15. In the equations we used to predict final grade, the chances were 2 to 3 that the actual grade would be within a range of + or - 1.15 of the predicted grade. None of the analyses yield equations that would be very accurate in predicting final grade. Counselors may use the information on relative importation of variables in helping to plan a student's program. Of course, the data would be most useful when extreme scores are predicted. In this case, the counselor might advise a student not to take Accounting 101, at least at that time.

The variables with high correlations with success were taken into consideration in subsequent comparisons of instructional methods. For example, an experimental section with an inordinate number of veterans and/or students who have studied high school bookkeeping would stack the experiment in favor of the experimental method.

In short, the correlation research methods can be useful in teasing out variables and identifying those extreme cases which could be predicted with some degree of assuredness. There are, however, real limitations to this approach, including the fact that it does not necessarily identify casual-relationships and it is far less rigorous than the experimental approach because it exercises less control over independent variables. Then, too, it encourages a "shot-gun approach" to research whose results are often meaningless.

Ex-Post-Facto Research: The causal-comparative research method or ex-post-facto research can be a strong approach, even though it is not a true experimental method in that effects are manipulated. The purpose, as we pointed out, is to investigate possible cause-and-effect relationships by observing some existing consequences and searching back through the data for plausible causal factors. This is in contrast to the experimental method, which collects its data under controlled conditions in the present. A good example of ex-post-facto research is the application of the multivariate analysis of variance oriented research strategy (MANOVA) toward understanding educational/vocational development.

The MANOVA strategy involved use of multivariate analysis of variance, discriminant analysis and classification in multivariate or discriminant space. Cooley and Lohnes(5) have pioneered these procedures and have developed the computer programs to carry out this method. A good example of this approach is found in Predicting the Development of Young Adults by Cooley and Lohnes(6).

At our institution we have yet to do extensive studies but have found our initial results rather interesting. Substantial differences in the various aptitudes among graduates of various curricula become quite apparent. The methodology yields insight into the nature of the student body and their interaction with curricula.

True Experimental Method: With this approach, we investigate possible cause-and-effect relationships by exposing one or more experimental groups to one or more treatment conditions and comparing the results with one or more control groups not receiving treatment. Most of us who have had courses in statistics and design are well aware of this method. We also recognize that it is almost impossible to use in most of the research we conduct at our institution. In light of the fact that it is almost impossible to come up with random assignment of students to sections, we may move to the quasi-experimental research.

Quasi-Experimental Method: Here we try to approximate the conditions of the true experiment in a setting which does not allow the control and/or manipulation of all relevant variables. The researcher must clearly understand what compromises exist in the internal and external validity of his design and proceed with these limitations. An example of this would be trying to compare the effects of treatments in college classes without being able to assign students to treatment at random.

The second part of our study of Accounting 101 dealt with instructional methods and was essentially a quasi-experimental design. We tried to overcome the lack of random assignment of students to methods (1) by using identical and/or adjacent time periods on the same day, (2) by performing one way analysis of variance (ANOVA) with each of the ACT test scores, and (3) by reviewing the groups on the variables identified as having a high correlation with success in the course from our study of student characteristics. We satisfied ourselves that none of the experimental sections were loaded in favor of success on the criterion variable. We then proceeded to do 2-by-2 ANOVAs having assigned each instructor both methods of instruction, one being the traditional approach to Accounting 101 and the second being a multi-media approach to Accounting 101. Results of this study showed that, overall, there was no significant difference in performance of students under either method.

Even when there is such a lack of significance, however, one still has learned quite a bit. The point here is that the multi-media approach is an equally viable method of instruction, and the results of questionnaires given to the students showed that a great many prefer this method of instruction. Of course, there are such things as the Hawthorne effect, and this procedure would have to be replicated over quite a period of time to see if the attitudes held up.

"Action" Research Method: Selgas and Shaffer's Chamber of Commerce Community-wide Survey(19) was the first step in improving the relations between the Chamber of Commerce of the Greater Harrisburg Area and Harrisburg Area Community College. In terms of design, this project lacked rigor in that we carried out a newspaper survey with all the problems of nonresponse bias. We did make an attempt to control for differential response rates for various subgroups in the potential survey population. By doing this, we found considerable agreement among most of the constituencies. But even with over 1500 responses from the general public, we were still left with a response bias.

A Final Comment

These are the general research methods in a community college setting. This overview was intended to bring individuals who are new to the field of institutional research in contact with some experiences of an individual who has been in the field five years.

It is worth noting that our examples have not included any involving the business operation of the college. This situation should change as the business office and IR office are forced to work together developing management information systems (MIS). I assume that virtually all IR people will eventually become involved in the development and maintenance of the institution's MIS. Andrew and Moir's(2) text on the use of information is an easy introduction to this field. Next, you should review the publication of the National Center for Higher Education Management Systems (NCHEMS) at the Western Interstate Commission for Higher Education (WICHE). Whether you use the WICHE/NCHEMS MIS in total or partially, the materials are valuable in terms of your own understanding of MISs. Much of the future of IR lies in this arena.

The path of IR offices at community colleges have been difficult at times. I am, however, more optimistic than ever that IR has a place at community colleges and will make a far greater contribution than ever before.

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SAMPLING, DATA COLLECTION, AND DATA PROCESSING

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Perhaps I should begin this paper by indicating what it is not. It is not a paper that carefully delineates the ways and means of sampling, lectures on research methodolgy, or attempts to provide a mini-course on data processing. Although the institutional researcher must have a complement of skills in these three areas, he or she does not have to be an expert in them to be effective. There are individuals with far greater expertise than anyone at this conference who can teach us all the skills, pitfalls, and theory of sampling and data collection and processing, who would nevertheless be poor institutional researchers.

It is important for the researcher to resist any temptation to become an administrative accountant of data that is collected and processed. This is why he must develop management skills and an understanding of higher education and business. The researcher must have tremendous analytical capabilities. These abilities must, I feel, far exceed any proficiencies in statistics, data processing, or research methodolgy.

What I would like to do in this paper is describe the approaches used by the Office of Institutional Research of Mercer County Community College, Trenton, New Jersey, for sampling, data collection, and data processing. As an example, I will use our Student Follow-Up Program for graduated and nonreturning students.

Sampling

Sampling is the process of identifying a universe or population of concern and selecting from that population the subset or sets to be studied. Sometimes, however, the population of concern and the population we actually know and study differ because of sampling problems and response rates. This is particularly true in the study of former students. Because of address problems or inactive individuals, the population of interest becomes narrowed to what we actually can identify or to those who actually respond.

A question usually raised is whether to study the entire population or focus upon a sample. Usually in determining samples, there is some compromise reached between the need for accuracy and the need for economy. At Mercer, we have chosen to survey an entire population (or at least the known population) rather than an identified sample. This decision was made partly because each year the graduating class and the nonreturning student population are not prohibitively large. In addition, the objectives of the Student Follow-Up Program made it necessary to communicate with every such former student. To date, this means a survey of approximately 300 nonreturning students each semester and a survey of 500-600 graduates each summer.

There may come a time, however, when the size of these populations is such that sampling will be necessary. Studies we have done of enrolled students (part-time students in the fall of 1973 and full-time students in the spring of 1975) have included a sampling.

In these cases, the populations consisted of several thousand students, and we didn't feel it was necessary to communicate with each individual.

The basic distinction in sampling theory, of course, is between a probability and a nonprobability sample. Generally, if we want the findings to be truly representative of the entire population, we are obligated to take a probability sample. If, on the other hand, our intent is to obtain some sense or feeling of the particular population, the nonprobability sample is preferred. In addition, for reasons of convenience and economy, the risk of using a nonprobability sample may need to be taken. The key, however, is to be sure there is no assumption that nonprobability sampling is representative of the entire population. It must not be stated or implied. In fact, it is best to clearly state that the findings and interpretations are constrained to the identified respondents and only to those respondents. There is no need for the researcher to apologize for a study that is descriptive of a particular group rather than an entire population.

At Mercer, we have used both nonprobability and probability sampling for one study or another.

Nonprobability Sampling: In the accidental sample, the researcher haphazardly reaches out and uses the available cases. At Mercer, we have chosen a classroom of students at a particular hour and administered a survey to them. On the other hand, in the quota sample, the researcher wants to obtain some sort of distribution or quota of the various population elements beyond what is immediately available. Finally, for the purposive sample, it is assumed that with good judgment and appropriate strategy one can hand pick the cases to be included. We identified such a sample at Mercer by picking out students in the Student Union who met the selected population requirements.

Probability Sampling: The key to probability sampling, of course, is the accurate, total, and unduplicated list of population members. Without such a list, it is not possible for the researcher to guarantee that all population elements have the same probability of being included in the sample. With the list, the researcher can employ a simple random sample utilizing a table of random numbers, or he can use a systematic sample, taking every "ith" individual, after starting with some randomly selected cases among the first "i" individuals, until the required size is reached.

Frequently, the researcher can utilize stratified sampling as a refinement of the simple random sample and can reduce the number of cases required to achieve a given degree of accuracy. When Mercer uses this approach to measure students within programs, the actual population lists are separately compiled.

The size of the particular sample depends, of course, upon the power level of the survey. Good representation with a small sample is better than poor representation with a large sample. It would also hold true that good representation with a sample is better than poor representation with a population. An 80 percent response rate for a sample is more satisfactory statistically than a 20 percent response from a population.

The size of a sample also depends upon the degree of heterogeneity of the population. If the phenomenon to be studied is relatively homogeneous, a small sample is sufficient. On the other hand, the greater the variability of the phenomenon is, the more difficult it is to obtain an adequate sample. The size, then, becomes dependent upon the nature of the population, the type of sampling designed, and the degree of precision or accuracy that is desired.

There may be times when the researcher must attend to nonrespondent bias in the study. Here again, pressure for economy and efficiency may be balanced against demands for total response of the population or sample. If there is reason to believe that respondents are uncharacteristic of the survey group, then there should be some nonrespondent study. Moreover, if there is reason to account for each member of the survey group, then there should also be some nonrespondent study. The researcher might statistically compare responses of the survey group with different waves or develop some technique for inquiry once all administrations of the instrument have been completed.

Data Collection and Processing

The collection and processing of data, of course, are very much related to the sampling. Because Mercer surveys the entire population of former students in the Student Follow-Up Program, we must devise an instrument that facilitates data processing. Unless the items are relatively standardized, it becomes a monumental task to tabulate the data and do the necessary analysis.

Because of Mercer's desire to communicate with every graduated student, the survey of the entire population is considered necessary.

In order to survey this entire population rather than a selected sample, it is necessary to design a relatively structured and standardized form. Our survey form consists of four pages of predominantly close-ended and alternative response items and an open-ended summary item. To use a questionnaire of this kind, we attempt to keep the form short and simple, make an honest and attractive appeal for respondent cooperation, and employ extensive follow-up mailing waves.

Even though our data collection must be standardized and structured, we are still able to provide for item flexibility. As an addendum to the four-page survey form, we have developed what is called "The Supplementary Items" -- items prepared voluntarily by interested departments or academic units. These items are open ended and are related specifically to a particular program or department. The form is loosely inserted in the graduating student's form. Once it is administered, we make no attempt to tabulate or analyze the data that is provided. The responses for each subpopulation are simply gathered and submitted to the appropriate department or division head. Although these items create an additional burden for the Research Office, which must process and administer the form, they do meet a very special need of the departments and add flexibility to the survey form.*

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*Although the Supplementary Items increase the time required for the respondent to complete the survey form, this does not appear to affect the return rate. For graduates of programs without the Supplementary Items, the return rate is approximately the same as for those programs that include the optional items.

As indicated earlier, one problem in surveying former students is the difficulty of keeping up-to-date addresses. To assist in longitudinal follow-up efforts, then, we include an item in the survey form asking the respondent to provide the name and address of someone who would know that individual's address in the future. By retaining this information in a student-history file, we can maintain contact with with the graduate after the one-year follow-up.

Long-Term Use

It is particularly important for the researcher to develop a form that reflects the objectives of the study so that it is a valid and reliable instrument. Pretesting the instrument on a nonprobability sample has proved effective in ironing out unanticipated problems. Moreover, the survey form can and should be useful for many years. Thus, the effort put into developing an effective instrument ultimately saves time. Moreover, utilizing the same instrument, or at least a majority of the same items, for several years facilitates longitudinal comparison of populations.

In developing the instrument, it is important for the researcher to know not only when and why information is needed but also what information is needed and for whom it is intended. The objectives of the study should be carefully delineated prior to any instrumentation. The purpose of the Student Follow-Up Program is to collect information from the college's former students to assist in evaluating the effectiveness of the educational programs and services. Another purpose is to provide the information on a regular basis primarily over a longitudinal reference. Specific purposes are listed below:

1. To collect information about former students concerning their biographic and educational characteristics and plans

2. To determine the present and accomplished activities of former students

3. To collect information from former students about their experiences at Mercer and their assessments of the programs and services

4. To determine the degree of satisfaction of former students with their employment/educational situation

5. To provide requisite data for completion of HEGIS and other external reports

6. To communicate to former students Mercer's interest in their personal objectives and the college's availability for possible future assistance

Data from the existing history files and the survey is collected for both the nonreturning and graduated students of Mercer. Indicators are developed to measure, through the Student Follow-Up Program, the attainment of certain selected college goals and objectives. Biographical information collected through the surveys is eventually stored on a history file where it becomes part of the student's record.

Systematizing and regularizing the on-going follow-up of students can produce extremely beneficial results. If such a program is repeated each year, codification of procedures becomes necessary. Although, such attention to detail and thoroughness in the instrumentation and development of procedures requires considerable commitment to the project in the initial year, the long-term benefits are considerable.

At Mercer, we have developed a 140-page Manual of Procedures, which covers the nonreturning and graduating student surveys. We feel very strongly that careful delineation and codification of the data collection and data processing procedures facilitates the conduct of the entire program.

Advantages of the Program

The primary advantages of the MCCC Student Follow-Up Program are described in the Manual of Procedures. These advantages include: the capability for producing the survey findings (output) for whole populations as well as identified subgroups; the means for identifying indicators of goal attainment that feed into the survey form; the longitudinal nature of the system; and the availability of a survey form that produces data that is consistent for entire populations but is flexible enough to allow open-ended items for particular groups. These advantages bear upon the entire survey effort, from adminstering the form, to coding and keypunching the data, and analyzing data and preparing the final report.

Of particular note in this survey effort is our attempt to relate college goals to identified outcomes. To provide a base upon which to measure attainment of certain goals through the survey of former students, specific indicators were developed as the framework for the Student Follow-Up Program. Generally, these indicators fall into three outcomes categories, which are found within most comprehensive community colleges:

(a) Student occupational career development

(b) Student educational career development

(c) Student educational satisfaction

With these defined indicators, the survey forms were developed to obtain data for application to these indicators. Figure A on page 61 shows the process by which data are obtained through the survey instrument and channeled to the appropriate indicators for assessment of goal attainment (student outcomes measurement). The College-Wide Objectives (Step 1) provide the input from which the Indicators of Goal Attainment are operationalized. These indicators (Step 2) then provide input into the design of the survey instrument or the Survey Items. The data subsequently obtained from the Survey Items (Step 3) provide the output by which agreement with the Indicators can be judged, and, finally, agreement with the Indicators (Step 4) suggests attainment of the goals.

To facilitate the processing of survey information, a Fortran computer program was developed to tabulate, cross-reference, and print out the data on MCCC's computer. The data cards can be punched directly from the survey form after some prescribed coding. Our hope is that a delicate balance has been reached in the creation of a form that not only facilitates data processing but is also conducive to student response.

The output of this MCCC Tabulation Program was designed to print out the individual items, alternative responses, actual responses (including percentage distributions) subtotal of responses to each item, and subtotal of nonresponse to each item. The program is designed so that the response total for a particular item--for example, number presently working full time--becomes the base number for subsequent and related items.

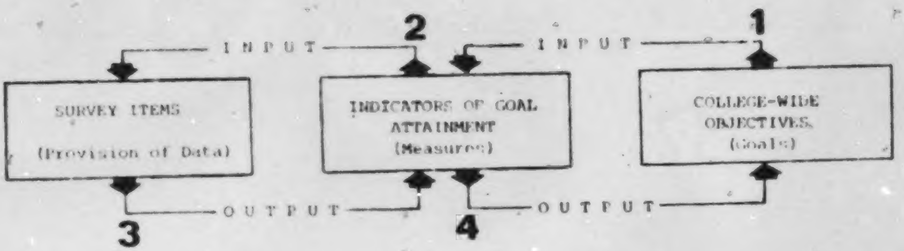
2
1
INPUT
INPUT
SURVEY ITEMS
(Provision of Data)
INDICATORS OF GOAL ATTAINMENT
(Measures)
COLLEGE-WIDE OBJECTIVES
(Goals)
OUTPUT
OUTPUT
3
4

Figure A. Assessment of Goal Attainment through the Survey of Graduated Students

The MCCC Tabulation Program provides tabulations and percentage distributions for the entire population of graduated student respondents as well as designated subgroups. Thus, the printed output can be obtained for as many designated subgroups as desired. Various subgroups can be identified by certain biographical/educational variables or by cross-reference of responses to items within the survey form itself. The output from the MCCC Tabulation Program is designed to be utilized directly in the subsequent research report.

In addition to developing systems and procedures for on-going and special studies, institutional researchers must be involved in data collection in yet another way. The researcher is increasingly required to take the role of strategist for information gathering and processing. He or she must be preoccupied with data collection procedures and definitions so the data can be used for the requisite operational, control, and planning functions of the college so the management information systems that are developed do not become ends in themselves. The researcher must be involved in establishing logical data collection and processing systems that yield useful and meaningful information and applications based upon reliable and consistent data. Even though the evaluation of higher education programs is dependent upon facts and statistical data, we must recognize the importance of the researcher whose informed and intuitive judgement qualify him to also take part in and enter the interpretation process.

Benefits of the Research Process

One of the effects of data collection is sometimes overlooked even though the benefits may actually be greater than the actual research findings. The "process" of the research provides a potentially powerful stimulus for discussion and debate about the areas under consideration. The importance of the research study may lie as much in the provocation it causes as with the information it eventually reveals.

The fruitless collection of data is probably the most perturbing and humbling problem of the institutional researcher. If the purposes of gathering the information are clearly defined, however, meaningless data collection is usually eliminated. Data simply remain data until they fulfill a purpose or specific objective and are put into a context that allows prudent judgements to be made. Even if a sophisticated design and extensive statistical methodology are developed, without sincere and thorough consideration of the purpose of the study, results may be more ambiguous than meaningful.

SOME PRACTICAL CONSIDERATIONS IN ANALYZING AND INTERPRETING DATA

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One of the functions of a community college researcher is analyzing data and interpreting findings for decision makers. This paper presents several aspects of that task. It will be assumed that data is already available in some format--data that has been connected and treated by means of statistical methods or other techniques.

The Politics of Data Interpretation

As a practical consideration, it is important to understand what kind of information your supervisor wants. It is possible, of course, to interpret data in a number of ways. Books such as How to Lie With Statistics attest to the fact that a number of conflicting conclusions can be made about identical data. Such comments as "this is what we are going to do, so give me the data to support my plan" or "we do not want to present any data that would make a case for our opposition" are samples of the kinds of instructions researchers sometimes receive. The problem is that as a researcher you are taught to maintain objectivity, but for practical reasons you may feel that you should do what is asked of you. Objective interpretations may be unacceptable.

One solution is to convince your supervisor to allow you to analyze data as it should be analyzed regardless of what is to be presented in a public report. An alternative solution, admittedly more difficult, is to convince your supervisor to abandon any biased plan and allow the publication of an objective report.

Data Limitations

When you examine data, it is important to understand some of the factors that may affect your interpretations. For example, if data is obtained from only one source, you should consider its reliability. Data reported by the Bureau of Education Statistics and the U.S. Census Brueau would probably be more reliable than a casual campus poll that samples students who volunteered information about their drug habits.

Moreover, you should check to ensure that the data is complete. Is there something missing that might affect your conclusions? For example, in reporting on the number of students who transferred to a four-year university over the past five years, you should be sure there are no serious gaps in your numerical data. If the numbers are incomplete for one year, you should report it that way and attempt to determine whether the missing information may have influenced your analysis. It is also important to determine the currency of your information. If you are drawing conclusions from an outdated source, there is a chance your interpretations may be incorrect.

Finally, try to find other related data that will help confirm your conclusions. In the case of transfer students, if the same trend exists in other districts and the interpretations those districts provide are similar, there is a greater likelihood that you are on target. Multiple sources of confirmation are always useful.

The Question of Research Design

If you are to draw conclusions about data, it is necessary to review the methods used in collecting and analyzing information. In citing a research study that uses a true experimental method, you should determine whether the proper procedures were followed--including the use of control groups--and whether the treatment really did make a difference. Often, studies are referenced even though they have been criticized for poor experimental procedures and techniques.

In survey research, you should ensure that the questionnaires that are used do not have major flaws. If sampling techniques were used, check on the sampling procedures. Determine whether a biased sample might have been utilized. Was the sample large enough? Were random-sampling techniques employed? Was the sample representative of the population at large? There are books and articles written by authors such as Campbell and Stanley that can be invaluable in this effort.

If the results of a program evaluation indicate that an instructional program is working, review the entire evaluation plan. Check to see if the program uses an objectives-based approach requiring measurable data. This procedure makes it possible to determine whether the program objectives were really met. Seek answers to the following questions: Were data collected that lent support to the findings? Were proper methods used in collecting the data? Was there any reason to suspect that bias existed or that the findings were slanted.

Discussing the Implications

One of the difficulties involved in interpreting data is that it is usually not enough to discuss findings in their present context. You will probably be asked to discuss the implications of your interpretations and make some predictions about the future. For example, suppose your college enrollments have been growing dramatically over the past ten years. The question then is, "what will happen next year or the year after, and how will it affect our operation?" This is the type of question that makes a fortune teller out of most of us. One recommendation is to always anticipate this kind of question and be sure to prepare yourself to answer it. In the case of enrollment projections, you might need to develop some skills in projections methodology.

In evaluating instructional programs, it may not be enough to say that the program is not achieving its objectives. In conducting a formative evaluation, the decision maker will need to know what changes can be made to improve the future operations of the program.

The mark of a good research unit is its ability to examine past trends and present conditions and then make interpretations and predictions about the future of the institution and its operations.

The Need for Recommendations

It is one thing to draw conclusions, present findings, and package them in a neat bundle for use by decision makers. It is another to translate your interpretations into recommendations for action. This is a procedure often neglected by researchers in community colleges. For example, suppose a survey has shown that 90 percent of the students do not use the cafeteria food service? So what? Do you have any recommendations that might improve the utilization of the cafeteria? If not, whoever receives your report is likely to comment, "Nice to know, but who cares?" A more common response will be, "Give me some recommendations on what to do about it." The point is that recommendations are almost always in order and usually help the decision maker resolve a problem or make a decision.

The Case for Simplicity

Know your audience. If you are interpreting data for your college president or a board member the words you choose should be quite different from those you would use for researchers. The president would probably not know or even care about the meaning of chi squares, levels of significance, and other research jargon. You will be more successful if you briefly summarize your report in clear concise English on one page. Board members and presidents cannot be expected to read lengthy technical reports. If you must write one, it is useful to provide a brief abstract at the beginning of the report or attach a separate personal memo that summarizes the contents. Above all, remember to keep it short and simple.

Conclusion

Community college researchers should obtain the skills and techniques required for analyzing and interpreting data. There are, however, a number of practical considerations usually not mentioned in textbooks. These include: (a) understanding the politics of interpreting and presenting data; (b) being aware of the limitations in your data; (c) reviewing the techniques and procedures used in the research design; (d) discussing implications; (e) providing recommendations; and (f) keeping reports simple and brief.

It is only through experience and learning from mistakes that the researcher will come to know the reality of data analysis and interpretation, but it is hoped that this paper will provide some insight.

DEVELOPING AND DISSEMINATING RESEARCH REPORTS

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The Purpose of Institutional Research Reports

The institutional researcher must always keep in mind that his/her report is written for a college administrator, faculty member, the president, or a lay board member and not for another professional researcher. The reader is a busy person who has neither the time to read, nor interest in, exotic research designs and sophisticated statistical routines. How to report findings so that the person who needs to use this information is able to understand it with a minimum of effort, is the topic of this paper.

The primary purpose of institutional research is to describe the institution quantitatively and qualitatively. The researcher must report on students, faculty, credit hours, and dollars and must determine the quality of the students, the faculty, and the programs of the institution. It would be a waste of time and money to spend a great amount of hard work securing data about these things and then report them in such a way that the president neither understands them nor is able to use them in the administration of the institution.

An institutional research report is not a dissertation or a journal article. There is no need to convince a committee of one's ability to design an experiment and write it up; certainly the president is not interested in one's ability to write footnotes in the proper form. Probably no one at the institution will ever replicate the study. They simply want to know what you found out and what you recommend.

Parts of a Report

Most reports are divided into six parts: 1. statement of the problem; 2. methodology used; 3. review of the literature; 4. report of the findings; 5. conclusions; and 6. summary. Each of these is discussed below.

Statement of the problem: The problem must be clearly stated so that the reader can determine at a glance if the study deals with questions that concern him or her at the moment.

Methodology: The methodolgy of the study must be explained simply enough so that a layman can understand what was done and which aspects of the problem were covered by the study. (A detailed explanation of the research design and the statistical techniques that were used would best be placed in the appendix.)

Review of the literature: Only studies directly related to the one being reported should be included in the review of the literature. Related studies at similar institutions will be valuable, since the reader wants to know how the problem he or she is facing has been handled at other institutions of equal size serving the same size of constituency.

Report of the findings: The findings should be stated clearly so that there can be no confusion about them. The probability of an entering freshman earning a degree or the proportion of the graduates who find jobs in related fields are the kinds of statements deans and presidents like to lift out of an institutional research report. The finding that a difference between two groups of students is not a matter of chance is what is important, not that an .05 level or an .01 level of significance was found.

Conclusions: A conclusion should follow from each finding of importance, and where appropriate, recommendations should be made. The researcher may be as bold as he or she wishes and may expand on the findings as this may be the only opportunity to gain the attention of the administration.

Summary: This part of the report may be all the busy administrator ever reads. Therefore, it must be written carefully and accurately. Do not underestimate the importance of the summary.

The very first page of each institutional research report should be a one-page abstract. From this the reader will decide if the whole report is worthwhile reading. Also ERIC will probably use it verbatim as the document abstract. Therefore, write this brief description carefully.

The appendix is the place for all that which is too important to be left out but which has no place in the text. Copies of questionnaires, reference data tables, and statistical techniques which other researchers may be interested in should be placed in the appendix. Because the report will be considered a reference within the college regarding the particular topic, it is wise to attach all relevant information so that files will not have to be searched a year or so later when some faculty committee or administrator finally gets around to dealing with the topic.

The following items are not absolutely vital to a report but may make the difference between whether or not it is ever read or taken seriously. They come from the author's experience in writing many reports, some of which apparently had little or no value to the institution.

Always consider how the document will appear to someone who knows nothing about it. Few busy college administrators have time to read the first few pages of a report just to discover what it's about or if it's the one they've been looking for.

An attractive cover may add nothing to the content or importance of a report but may determine whether or not a busy administrator notices and reads it. The cost of an eye-catching cover is more than repaid by the positive image and impression created at first glance.

A report without a title page showing what the report is about and who wrote it seldom gets noticed. Some researchers who feel a covering memo adequately serves the purpose of the title page do not realize that such memos are usually separated from the reports they describe. So be certain your report has a clear and uncluttered title page.

Long reports, or reports with more than two or three parts, should have a table of contents and, if there are several tables and figures included, a list of tables and a list of figures.

An introduction that provides background information and assists the reader to understand the context in which the report was written is helpful. Short reports do not require separate introductions; the opening paragraph serves this same purpose.

The remainder of this paper deals with the presentation of data in tabular form and in the form of charts and graphs. The discussion of tables draws heavily from a monograph written by Helen M. Walker and Walter N. Durosh in 1936, which must be considered a classic in the design and use of tabular presentations in research reports.

Preparing Tables

Tables are developed for two main purposes: (1) to enable the researcher to discover relationships not clearly discernible in the unclassified data; and (2) to facilitate the presentation of facts regarding the topic under study. Thus, tables both analyze data and summarize the results of such analysis.

Today institutional researchers often determine the tables to be used before the data are even seen. They do this by using statistical packages such as the Statistical Package for the Social Sciences (SPSS). Raw research data fed into the computer come out in tabular form often ready to be used in a report almost as is.

Tables may be for the purpose of (1) presenting a comprehensive set of data or (2) presenting a selected set of data in an arrangement that brings significant relationships into perspective. Being a repository of information, the general purpose table should be arranged for convenience in extracting information. The age distribution of a student body for example, would be from youngest to oldest. The matriculation-by-curriculum table would list the curriculums in alphabetical order. A table showing where graduates transfer would be arranged geographically.

In a special-purpose table which compares the size of instructional programs at a college, the list of programs would be arranged according to size so that the largest and smallest are obvious. If, for example, in a study of placement tests, the tests are arranged in the order of size of their reliability coefficients, either in an ascending or descending order, it will be obvious at a glance which tests are the most and which are the least reliable. Thus, since the goal of the special-purpose table is clear analysis, an alphabetical or geographical order is usually not desirable; it is more expedient to arrange the items according to some meaningful scheme of classification.

The general-purpose table (see page 82) should be arranged so the user can quickly find the required information. Therefore, the data are arranged in a logical way such as alphabetical order.

The majority of the tables used in institutional research reports are special-purpose tables, planned to facilitate analysis, interpretation, and description rather than to present a tabulation of all known facts. Most tables are meant to show trends and relationships and contrasts rather than to furnish complete enumeration.

The researcher must decide between (1) including the facts being discussed as part of the text, (2) including the data in tabular form but without title or number and treating them as part of the text, and (3) placing them in a formal table with number and title. Following are examples of each:

1. Textual treatment

Of the 2,830 students matriculated in career curriculums for the fall semester of 1975, 34 percent were enrolled in Business and Commercial Technology, 24 percent in Public Service Technology, 21 percent in Allied Health Services, 11 percent in Data Processing, and 10 percent in Engineering Technology.

2. Tabular form used as part of a sentence

The average student credit hours (SCH) per full-time equivalent (FTE) faculty for all departments in each segment of the state's higher education system indicate decreasing SCH/FTE ratios as the course level increases at the university (1:59; 1:250; 1:77) and at the state colleges (1.320; 1:210; 1:170). In an alternative manner, one can calculate the FTE faculty required to produce 1,000 student credit hours using these ratios:

	Lower Division	Upper Division	Graduate
Community Colleges	3.41 faculty		
State Colleges	3.13 faculty	4.76 faculty	5.88 faculty
University	1.93 faculty	4.00 faculty	12.99 faculty

While graduate instruction is relatively expensive in terms of faculty resources, the relatively inexpensive lower division instruction at the University may be due, at least in part, to the presence of graduate teaching assistants whose contributions would not be available without the existence of the graduate courses.

3. Formal table

Responses from the employment section of the questionnaire indicate that 73 percent of the respondents were employed. Of those who reported employment, over three-fourths were employed on a full-time basis as shown in Table 24.

TABLE 24

CURRENT EMPLOYMENT STATUS OF STUDENTS WHO ENTERED THE COLLEGE IN 1970 AND 1971 AT THE TIME OF THE SURVEY

Current Employment Status of Students	New Entrants 1971		New Entrants 1970	
	Number	Percent	Number	Percent
Part-time	963	23%	623	22%
Full-time	3,155	77%	2,164	78%
Total	4,118	100%	2,787	100%

The researcher must decide when to use each of these three types of treatment. When the data are to be referred to more than once in a report and must be easily found, a formal numbered table should be used. However, when facts depend for their meaning on the immediate context, when they must be read in context to be understood, and when this context cannot be fully conveyed in a table title, then these facts should not be displayed in a table but within the paragraph. (Keep in mind that a formal table is movable and can be lifted from a report without losing its meaning.)

Tables tend to draw attention to data. Thus, the tabular form may be used effectively to emphasize data which might otherwise get lost in the text. Long lists or large amounts of data can best be displayed in a table and placed on a separate page.

A table is a logical presentation of data. For example, the title is always at the top of a table because a table is really a list, and one tends to read down a list. The purpose of the title is to aid the reader in understanding the facts of the table. Therefore the title should be an accurate and precise description of the contents of the table. All the information necessary for reading a table should appear with it so that the table can be lifted completely out of the context and still be understood. The reader of the table wants to know (1) what it is a list of, (2) what or how many subjects the data describe, (3) what was the source of the data, (4) when were the data gathered, (5) what was the unit of measure, (6) how are the subjects classified, and (7) if percentages were used, what is the base. At the same time, the title should be brief. Moreover, it should not begin "Comparison of..." or "Relationship between..." A title tells what is listed in the table, not what the author hopes the reader will do with the table.

A series of related tables should have titles which indicate the similarity of the subject matter as well as the essential difference from table to table. This may be accomplished in various ways, such as using different sizes and faces of type, by using display titles with subtitles that carry the more complete information, or by composing the titles in a way that emphasizes the differences.

Tables should be numbered consecutively throughout the report. Any table necessary to the report as a whole but not required to understand the subject should be placed in the appendix.

Roman numerals avoid confusion with page and figure numbers. However, if there are many tables, Roman numerals may be cumbersome. A rule of thumb is to use Roman numerals if there are no more than 25 tables in a report; otherwise use Arabic. In the body of the text, each table should be mentioned by number, not as "the table above," or "the table following," or "the adjacent table." If the table is not mentioned in the sentence by number, one can place the number immediately following the sentence and enclose it in parentheses [(Table II)]. There is no need to say "(see Table II)."

Every column in a table should have a heading referring to the subheadings or the tabulations of data directly under it. Likewise, every row of the table should have a heading. Ordinarily, the line or row heading does not name the entries but identifies them as belonging to a particular class or group.

Headings in the stub or left-hand columns should refer only to the items of those columns, not to the rows in which the other column headings stand. If the column headings are in a group that requires identification, place their title in a box above them. Make certain that the column headings or combinations of box headings and subheadings name the data tabulated in the columns; these headings should name the entry and the class to which it belongs. All the subheadings under one box heading should be parallel in structure. This is true for rows as well as columns. Otherwise, omit the heading. In large tables, and especially on government forms, the columns and rows are often numbered to facilitate easy reference.

Column headings are usually in the singular, and categories must be mutually exclusive, without any possibility of overlapping. At the same time, categories must be all-inclusive. That is, there must be a place for every case, even categories such as "not given" or "no response."

There must be no confusion regarding what is included in the total. Thus the title "total" is not always appropriate. The term "total" should be reserved for those summaries obtained by the addition of all entries and may be placed at the top of the table rather than at the bottom for emphasis. The total of the columns is separated from the data in the columns by a double line so that the reader will clearly recognize it.

A mixture of symbols, abbreviations, and words in the same table is not recommended. It is not good form to use a symbol for one group of data and a word for another in the same table. Keep in mind that institutional research reports are written for nonresearchers and administrators who may not be familiar with Greek letters used as statistical symbols and other research shorthand.

Decimal points should be vertically aligned in the columns and carried out to the same number of decimal places. Never carry a decimal out beyond a meaningful number of places. In institutional research, few differences exist which require more than two or three decimal places. Decimal fractions should be written as "0.63" rather than .63 to call attention to the decimal point. Use a comma in numbers of more than three digits for clarity.

The dollar sign is placed before the first item in a column and before the last, or total. Never use it as a column heading. On the other hand, when "percent" is used as a column heading, the percent symbol (%) might well be placed after each entry, especially if the column to the left is composed of whole numbers. In some cases, the relationship of the whole number to the percentage can be emphasized if brackets or parentheses are placed around it. In such instances the brackets are also included in the column heading.

The logical structure of a table must stand out clearly. White space can often be used as effectively as lines. Whenever a table is clear without lines, it's best to leave them out. Generally, if a table has no more than three columns, there is usually no need for vertical lines. If a table crowds the page so that eye cannot easily select a figure, lines must be used. In a complex table, use lines to mark off major divisions only, using only white space to separate the items within the major divisions. Horizontal lines should be used only when there is a break in the structure to be emphasized, or a major subclassification to be set off. A line with every row is confusing and undesirable. Whatever lines are used should facilitate the reading of the table. If two columns of figures are to be compared, the lines should make it easy to follow the two and ignore the rest of the table. Sometimes a reader is mainly concerned with locating particular items, and the table must be so constructed that the entry in a given cell can be readily found.

The display effect of a well-made table may be spoiled by the unskillful use of white space or the lack of it. A table should be balanced much like a picture with an adequate margin. If a table won't fit on a page, perhaps two tables would be better. The use of inexpensive graphic reduction equipment such as Xerox provides considerable flexibility in placing tables on the printed page.

In summary, keep in mind that the purpose of a table is to provide a useful summary, not just add up a column of figures. Keep in mind, too, who will be using it. A busy administrator may only flip through your report and look at the tables. If that reader cannot at a glance get the message you are trying to convey, the table has lost its usefulness and has not made your report stronger. Make certain your message is clear.

Using Charts and Graphs

> The response to a visual presentation will determine its value. As a maximum response is the objective, the design of a visual for a non-technical audience should be guided by the fundamental rule, Keep it simple.*

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*Spear, Mary Eleanor. Practical charting techniques. New York: McGraw-Hill Book Company, 1969.

Institutional researchers should use visual presentations whenever they will contribute to the communication of an idea. A good graphic presentation has only one interpretation. Use charts to attract the attention of the college administrator or lay board member and you will get your message across if the chart is not cluttered up with too much detail.

Some data lend themselves to presentation by chart or graph and others do not. Likewise, there are certain types of graphic presentations which are appropriate only to certain types of data. If one item, such as fall enrollment, is to be plotted for several years, a column chart would be best. On the other hand, if the enrollment trend is to be emphasized, a line chart would be appropriate. The examples on pages 82 to 89 illustrate ways in which charts can be used to quickly convey a message whereas a table or narrative would be cumbersome.

Summary

Institutional research reports are not written for other researchers but rather for busy administrators, trustees, faculty, and citizens who want to know more about a specific aspect of the college. Therefore, the report should be written in straightforward language free of research jargon. Information necessary for replication, but not necessary to the understanding of the report, should be relegated to the appendix. The president should be able to quote from the report in presentations to the trustees and the community. Self-study

TABLE 11

1975 GRADUATES OF MONTGOMERY COUNTY PUBLIC SCHOOLS ENROLLED AT MONTGOMERY COLLEGE FALL 1975

High School	1975 Graduates	1975 Graduates Enrolled at MC	Percent of Graduates
Bethesda-Chevy Chase	582	85	15%
Montgomery Blair	578	90	16%
Winston Churchill	604	111	18%
Damascus	213	38	18%
Albert Einstein	414	80	19%
Gaithersburg*	593	125	21%
Walter Johnson	541	95	18%
John F. Kennedy	358	65	18%
Col. Zadok Magruder	390	106	27%
Richard Montgomery	410	88	21%
Northwood	515	90	17%
Paint Branch	277	42	15%
Robert E. Peary	658	164	25%
Poolesville	93	17	18%
Rockville	254	75	30%
Sherwood	250	43	17%
Springbrook	624	114	18%
Wheaton*	663	153	23%
Walt Whitman	727	80	11%
Thomas S. Wooton	361	74	20%
Charles Woodward	365	73	20%
TOTAL	9470	1808	19%

* Includes Evening High School

TABLE 17

THE CREDIT HOURS EARNED BY STUDENTS AS OF THE BEGINNING OF THE FALL SEMESTER OF 1975

HOURS EARNED	DAY	PER-CENT	EVENING	PER-CENT	DAY/EVENING	PER-CENT	TOTAL	PERCENT OF TOTAL
0 hours	4274	49%	1695	47%	556	35%	6525	47%
1-12	1410	17%	1055	29%	277	18%	2742	20%
13-27	1400	16%	459	13%	328	21%	2187	16%
28-45	1053	12%	227	6%	277	18%	1557	11%
46-60	453	5%	121	3%	111	7%	685	5%
61+	120	1%	64	2%	27	1%	211	1%
TOTAL	8710	100%	3621	100%	1576	100%	13907	100%

The special purpose table is used to emphasize trends or relationships and clarify differences among groups within the total population.

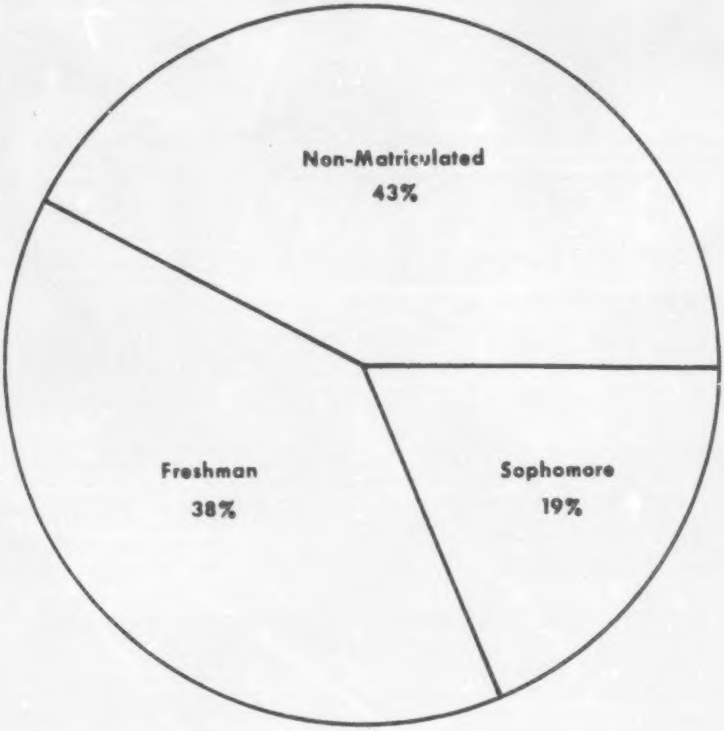
and accreditation committees should be able to find the answers to their questions quickly by referring to IR reports.

Tables should present data either in such a way that specific facts can be found or so that information supporting an argument or idea is obvious. Likewise, graphs and charts should be simple and present an idea clearly. The appropriate use of tables and graphics presentations in an institutional research report will facilitate the understanding of ideas and add much to the report. Furthermore, an attractive cover and a title page which clearly identifies the report can be of great value.

Finally, keep in mind that the purpose of the report is to accurately describe some aspects of the college, either in quantitative or qualitative terms, and not to demonstrate some exotic research.

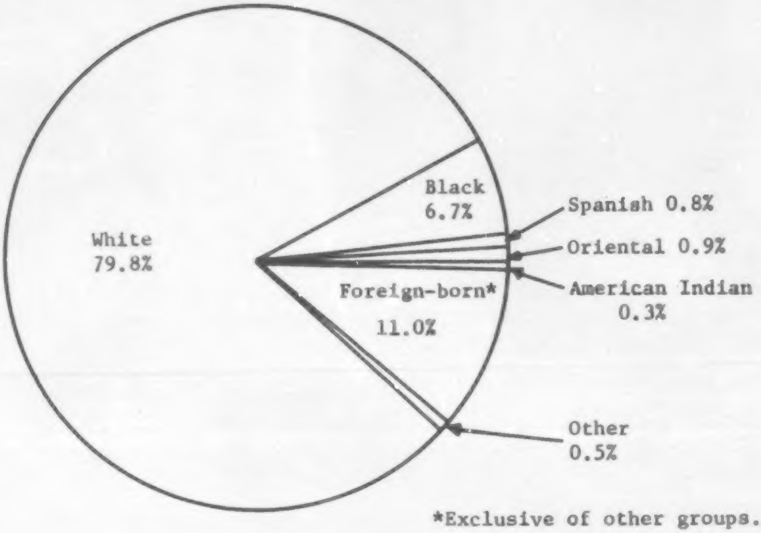
Figure F

THE CLASS DESIGNATION OF STUDENTS ENROLLED DURING FALL 1975



The pie chart is unequaled as a simple vehicle for communicating the relationship of segments of a group.

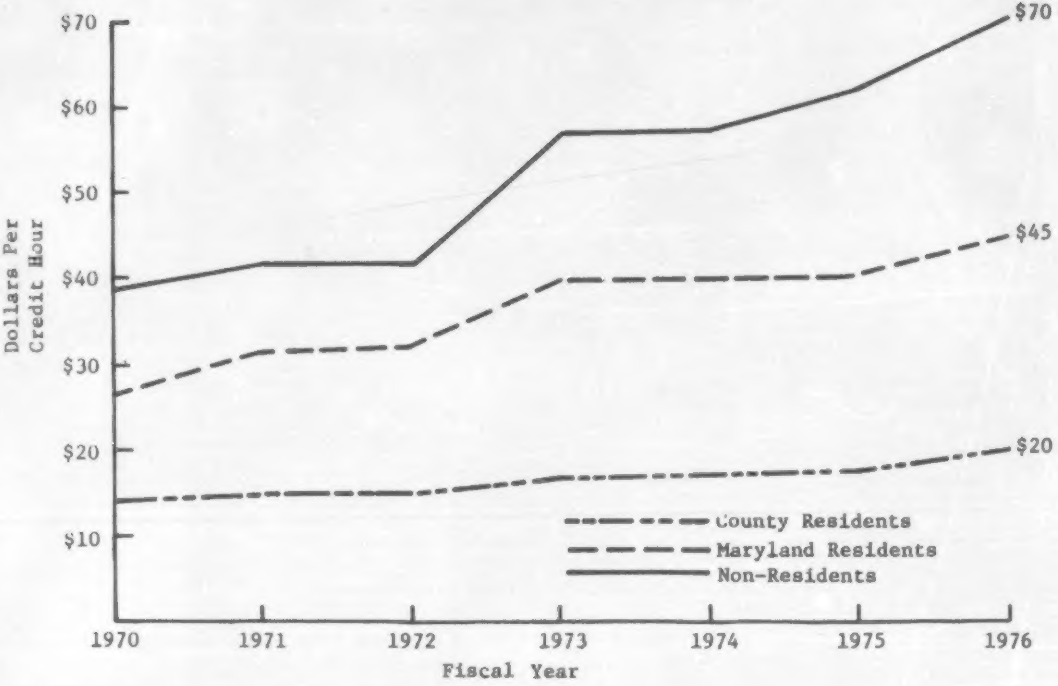
Figure B
THE RACIAL COMPOSITION OF MONTGOMERY COLLEGE STUDENTS



*Exclusive of other groups.

A chart or graph should be clear and easily understood. Only one message should be communicated, and it should be obvious at a glance.

INCREASES IN DOLLAR CHARGE PER CREDIT HOUR AT
MONTGOMERY COLLEGE SINCE FISCAL YEAR 1970

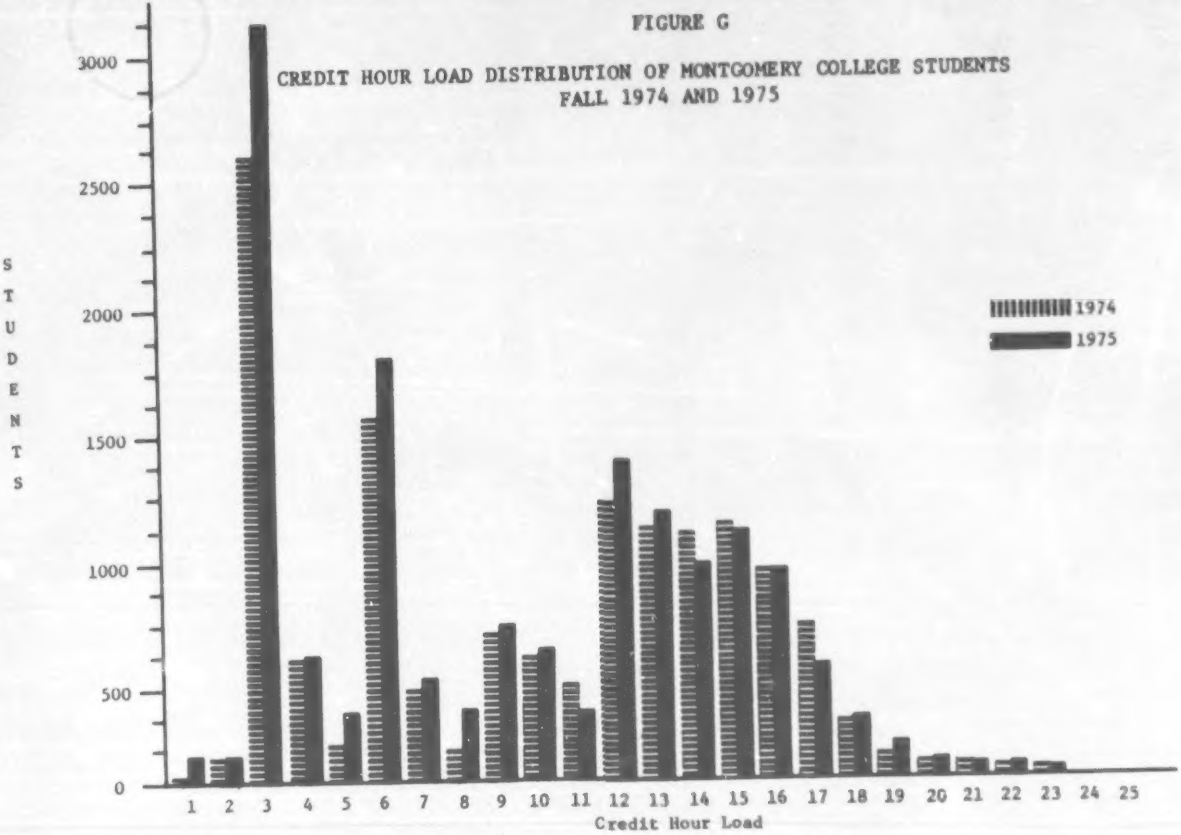


Trends are easily illustrated with a line graph using time as the "Y" axis.

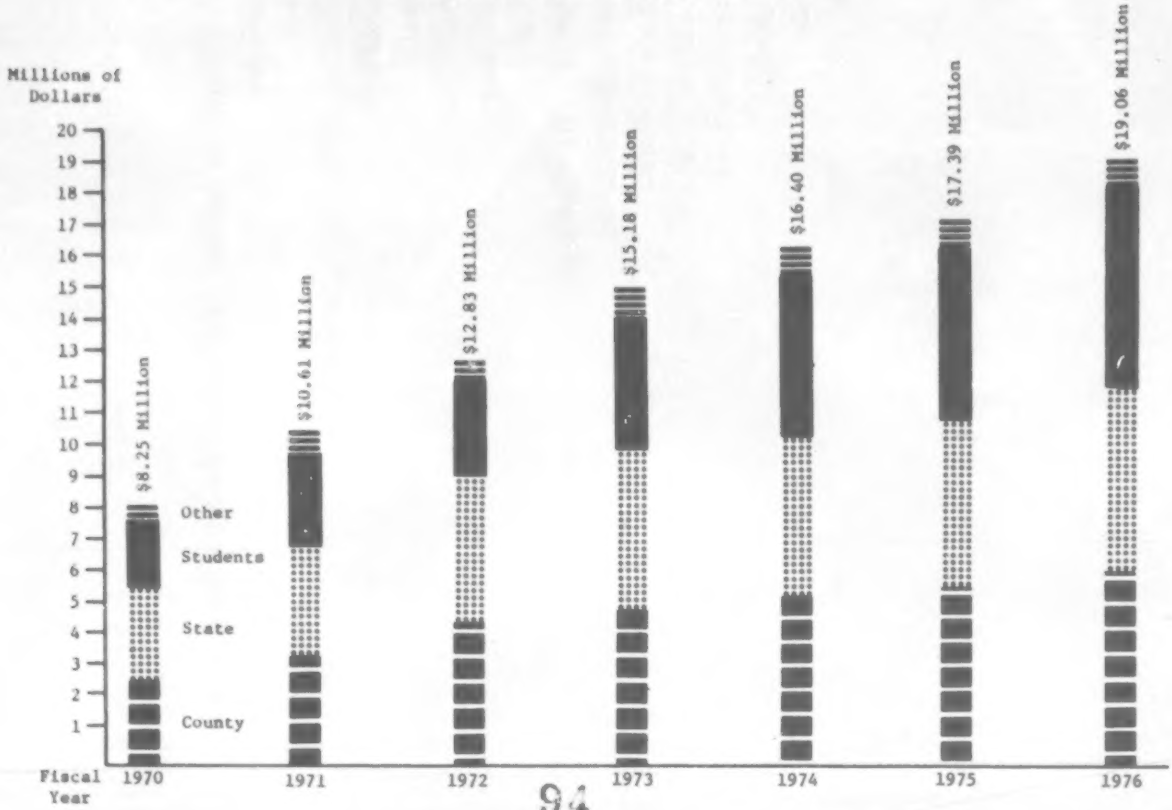
When comparing such data as the enrollment by credit hour load for two semesters, a bar graph such as the one below clearly indicates where changes have occurred.

FIGURE G

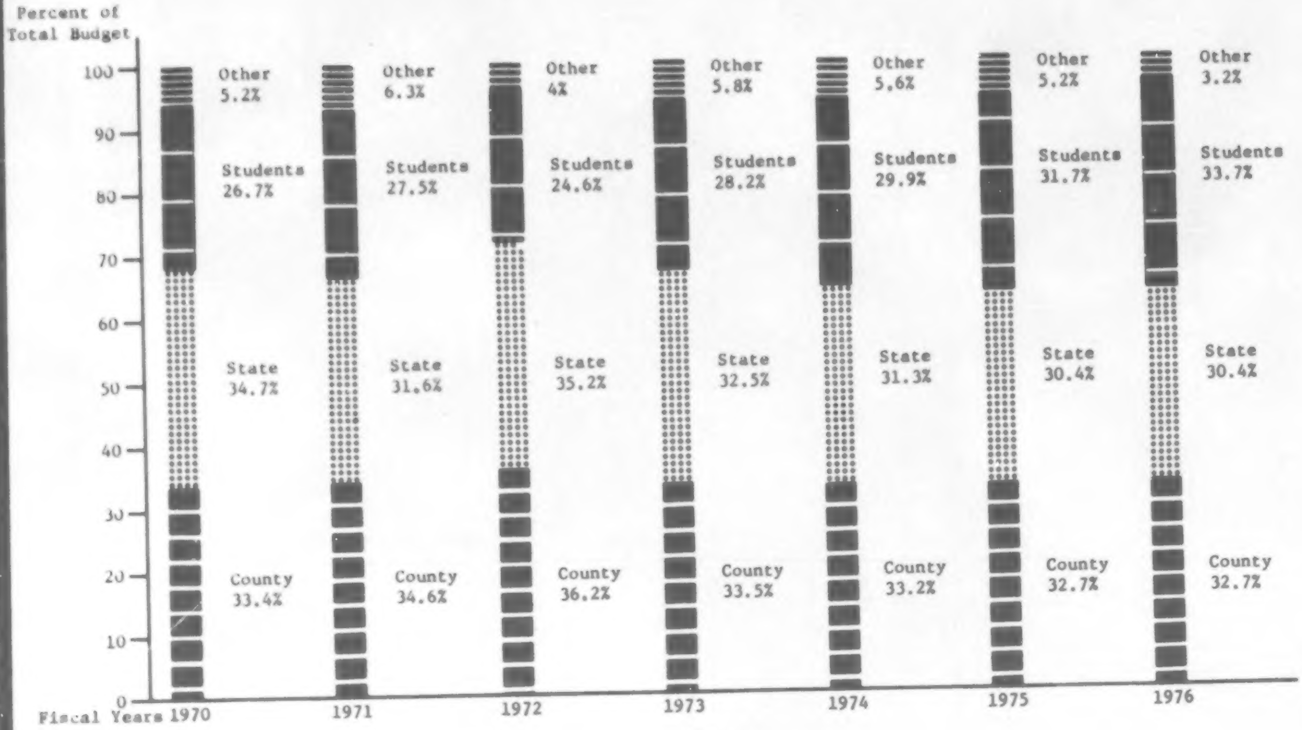
CREDIT HOUR LOAD DISTRIBUTION OF MONTGOMERY COLLEGE STUDENTS
FALL 1974 AND 1975



MONTGOMERY COLLEGE
REVENUE BY SOURCE IN TERMS OF ACTUAL DOLLARS
FISCAL YEAR 1970 THROUGH 1976



MONTGOMERY COLLEGE REVENUE BY SOURCE
AS PERCENTAGE OF TOTAL OPERATING BUDGET
FISCAL YEARS 1970 THROUGH 1976



MANAGEMENT: DEVELOPING ISSUES AND COMMUNITY COLLEGE RESEARCH

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The Current Setting

Community college administrators, like all persons interested in individual institutions as well as the general future of higher education in America, have witnessed significant new challenges emerging for these institutions. These challenges will undoubtedly alter the short- and long-range future for community colleges. They have emerged as the result of internal as well as external forces that by their nature have altered the kind of leadership needed as well as the management and operational functions of our institutions.

Community colleges have made certain adjustments in response to new conditions facing all of higher education. These adjustments were described during the sixties and early seventies as the democratizing component of higher education in America because the open-door and low- or no-tuition policies were among the major changes that took place.

In addition, the rapid growth in higher education enrollment during the period since 1960 (which resulted from several factors including federal aid for student tuition, alternatives other than the armed forces opening to 18-year-olds, and the post-World War II population group reaching the traditional college age) began to taper off dramatically, producing a state of slow or no growth for higher education by mid 1970. This declining enrollment phenomenon is expected to extend into the 1980s.

Furthermore, the rapid rate of inflation and related increases in wages and the cost of goods and services were experienced by all sectors of the American economy in the first half of 1970. During that period, higher education, was given lower priority by the state than before, particularly in relation to economic development and social services. The realities of a "smaller pie" to split among the various public sectors has meant less for higher education.

These major societal conditions, along with expanding expectations of those associated with higher education, the need in higher education institutions as well as state systems (such as boards of regents) for a method and process for managing decline--a concept foreign to higher education and its leadership. Reflecting on this new prospect, Kenneth Boulding(1) suggests that the "management of decline" is no easy task, and he states:

> Many (management) skills which were highly desirable and which were selected in the last thirty years may no longer be the skills which are needed in the next thirty... Yet we know so little about decline that we are not even sure what these needed skills are.

Leaders in higher education knew one thing: They had to develop improved ways to plan, manage, and evaluate the utilization of the resources that were available to them. They also knew that ways had to be found to maintain certain institutional flexibilities through the reallocation of resources as well as traditional allocation processes. Better definitions of institutional purpose, mission, and programs were needed.

Kennison(3) points out that community college administrators appointed in the past few years are a new breed and that this new breed frequently applies systematic management techniques in the implementation of board policies. It is clear that these new leaders will not only play a critical role in assuring the survival of community colleges as we know them but will also redefine institutional research to meet their leadership needs.

In a recent commentary entitled More Than Survival(2). The Carnegie Foundation for the Advancement of Teaching points out the problems currently being faced by higher education institutions as a result of external and internal conditions that have developed over the past fifteen years. Central to the Carnegie argument are:

1. The current decline in the enrollment growth patterns being experienced in American higher education,
2. The impact of inflation nationally and its differential effects in the public institutional sector--especially higher education, and
3. The problem of flexibility or the lack thereof as higher educational institutions attempt to make the necessary (and often survival) adjustments for the future.

In addition to the factors cited by the Carnegie Foundation, higher education institutions are faced with the American public's demand for increased accountability from all public institutions and agencies. Accompanying this external demand has been a new focus internally on efficiency and effectiveness measures of institutional operations. Specific implications for new and improved management of our institutions will be discussed later.

In addition to the Carnegie Foundation work, recent efforts of the National Commission on the Financing of Post-secondary Education as well as the continuing work of the Carnegie Council on Policy Studies have made clear the fact that individual institutions are affected by events at the national and state levels. Therefore, it is impossible for such institutions to plan in a vacuum, oblivious of external constraints. Also, it is incumbent on national and state governments to rationalize their own planning systems in order to be more supportive of individual institutions if such institutions are to maintain an acceptable level of quality beyond mere survival.

It should be clear to all involved in higher education that at this point there are no panaceas--no simple solutions to the problems now facing the state systems and the individual institutions--and any proposals for simple solutions must be viewed with great caution. This caution is necessary because at this time there appears to be a rush toward over-reliance on what appear to be easy technological answers to the institutional problems, usually given catchy labels such as DBM, PERT, PPBES, IEP, and the like. There are clear perils for management leadership of our institutions when such new scientific approaches to institutional management do not grow out of an institution-wide leadership philosophy that leads to a systematic, common-sense management improvement or development effort.

The Carnegie commentary makes two recommendations that should be considered by institutions seeking to respond in institutionally sound ways to the new conditions facing higher education.

The first recommendation is that institutional leaders prepare analyses of their institutions to determine, as accurately as possible, the present situation and the factors shaping the future (directions). These analyses should be used to inform their colleagues and constituents, and should be part of a strategy designed to create receptive attitudes and conditions that are conducive to change.

The second recommendation is that each institution, if it has not already done so, develop an overall strategy for developing flexibility in the use of funds, assigning faculty, using space, and effective decision making.

A thorough understanding of these recommendations and their implications for institutional management is fundamental to an understanding of the challenges facing community colleges and other higher education institutions and the responses that are required if they are to survive and prosper.

Challenges to Management--Now and in the Forseeable Future

Specific issues now confronting institutional leaders as a result of changing conditions can be categorized as either of a primary or secondary nature. In addition, other challenges proceed from these two major categories. It is important for institutional administrators--who are involved in planning, research, or development to understand these challenges and their inherent cause-effect relationships. A lack of understanding in this area will cause management, operational, and/or development problems for the practitioner.

Primary issues confronting institutional management are:

A. Accountability--addressing the public demand for greater accountability in both operations and board policy matters. The need for increased efficiency and effectiveness of operations is a related concern. Increased productivity is generally perceived as an expected outcome of efforts in this area.

B. Planning--the need for improved long-range planning with a written plan of advancement, which at least contains a mission statement, a statement of institutional goals for educational and educational support programs, a resource plan, and specific delegation of responsibility for implementation (by function, not person). An ongoing strategic planning system that ties the annual budget process to define institutional program goals is an essential outcome of improved institutional planning.

C. Management--improved management of institutional resources (human and fiscal) is the focal point of new demands facing institutions of higher learning. Applying new management-science techniques in higher education institutions will remain a challenge to community college administrators in the immediate future. Such techniques as MBO, PPBES, MIS, and others must be approached with care as indicated earlier. Because the climate for institutional change is critical to the achievement of the actual change desired, the direct application of management-science techniques to an "unready institution" can have counterproductive consequences. In the current period of heightened employee anxieties and tensions, care must be taken to assure that the improvement of quality in institutional efforts is understood as the desirable goal being sought.

D. *Evaluation*--Measuring the results of the efforts expended and the activities undertaken and establishing baselines for projecting the future are essential for meeting the challenges presented by demands for improved accountability, planning, and management. With the explosion of institutional information and the concommitant need for information to support improvement planning, management, and evaluation, it is essential that community college administrators identify leadership that is capable of producing good information and analysis to facilitate sound planning, management, and evaluation systems.

The role of institutional research and its place within the organization must be considered during the development of an improved planning, management and evaluation system.

Once the primary challenges and issues confronting the institution have been identified, a whole range of secondary challenges and issues--those having to do with the application of implementation of new planning, management, and evaluation systems, as well as improved organizational arrangements--must be addressed. Each institution must design its own plan for addressing the concerns it views as critical to its own survival. Because the conditions confronting higher education in each state and in each institution are often different, unique institutional responses are required. It is clear, however, that the primary challenges or issues confronting community colleges do not vary greatly. Each of you here must help determine the kinds of responses that must be made to the new demands for improved leadership-management.

An additional dimension, which should be focused on at this point, has to do with the increasing demands on institutional operations deriving from the external environment. Sound institutional efforts designed to improve accountability, planning, managment, and evaluation systems must be developed in light of the increasing demands of regional, state, and national agencies. Demands from these three external sources have had varying impacts on community colleges nationally. The least difficulty has been experienced to date from regional configurations, although program planning and funding appears to be emerging as an issue from this direction. This is particularly true when high-cost occupational or vocational programs are approved and funded at the state level. The concern over nonduplication of high-cost occupational programs will increasingly link regional considerations to decision making.

The demands for increased coordinated planning and evaluation have come primarily from state agencies that have been delegated the responsibility for statewide planning and coordination of higher education. Where community colleges are totally funded by the state, increasing tensions will become apparent as management issues are increasingly highlighted. Faculty collective bargaining concerns will undoubtedly act as a catalyst in this area.

The federal government's demands for information reporting and compliance with certain federal laws will continue to affect institutional operations. These responsibilities to the federal government will be a continuing concern because they require the use of resources that could otherwise be used for internal planning and management of the institution.

The implications of these external requirements must be taken into account in projecting certain long-range aspects of institutional management. Each institution must respond according to its unique state of development.

A Place for Institutional Research?

So much for the constraints and challenges and new demands on community college administrators. My experience leads me to be cautiously optimistic about the future of our institutions. The technological base and human talent are sufficient to meet the challenges, and higher education should emerge leaner and stronger from having been tested. Most of you are undoubtedly interested in the place of institutional research in future battles for institutional survival--in the front ranks, in the rear, or nowhere at all?

Past institutional research programs focused partially on producing longitudinal or evaluative studies (which were used basically in public relations/information efforts) and partially on management information development and reporting. These priorities will give way to new ones. As a result of new demands on institutional management, institutional researchers, planners, and development officers must now assist in constructing new directions for institutional research, which must emerge from the current chaos.

Let me be frank in saying that I have no idea whether "institutional research" as such is a useful concept or function or organizing principle. Indeed, it might be far more useful if we abandoned, at least for the time being, the term "institutional research" and, instead, focused on the informational needs of institutions that must be met if they are to survive and flourish. "Institutional research" can be justified as a function only as it contributes to meeting these informational needs effectively. This is a critical point to understand because, in my opinion, the lack of responsiveness to institutional needs--the information-as-an-end-in-itself syndrome --has kept the traditional institutional research function in the backwater of new developments. How many competently produced reports, of impressive size, have you read that proved "fascinating" or only "interesting" but certainly of no impact on institutional behavior?

There is no question in my mind that information alone is neither good nor bad, but when it does not meet a well-defined need, it is at best wasteful to produce it and a waste of time to read it. The only way I know of to approach the "usefulness" question is first to define the general types of decisions that are made in your institution and then identify the information needed to make the decisions intelligently. Of course, it is not enough for decisions to be informed; they must also be timely. In today's world, too late can mean never.

We know intuitively that institutions make decisions that are (1) strategic, (2) executive, and (3) operational/managerial. And it is not very difficult to identify the various kinds of information that are needed at certain times to make decisions falling in each category. Moreover, this can be done with very little technical razzmatazz and double talk. It is a job, yes, but a very commonsensical one.

To my knowledge, most progress has been made in operational decision-making, especially in such obviously critical areas as financial and budget management. We are only at the beginning in strategic planning, which, most of you will probably agree, relates most closely to what has been known as institutional research. "Research" suggests the more in-depth, long-term analysis on which strategic planning is based. But the point is that institutional research will prove relevant to long-range or strategic planning only in response to precisely defined information requirements emerging from the detailed design of an institutional strategic planning system and process. Again, it makes no sense to start with the information and then try to figure how to use it.

A final word on relevance: Let selectivity be your watchword! I share with my colleague, Harold Enarson, President of Ohio State, dismay at the fantastic volume of information uncritically generated for managers these days. Can anyone doubt that our information-generating capability has vastly exceeded our capability for analysis? I feel compelled to join the rising chorus against a continued preoccupation with the technology of information collection, storage, and reporting and to join the many other chief executive officers demanding less information of higher quality.

Do not doubt that the survival of institutional research as a function in some form will depend on its relevance as defined above. The pace has quickened, the challenges are substantially greater, and we at the helm of institutions will no longer take the time to separate the wheat from the chaff ourselves. Either provide what we need when we need it for strategic and operational decision making, or find yourselves out of the game.

Conclusions

The response of community colleges to demands for accountability will be very important in shaping their future. Also, the attention given to improvement of planning, management, and evaluation systems will undoubtedly play an important part in shaping the future of these institutions.

There are no easy answers or panaceas, however, for the problems that have developed over the past few years. Planning for and management of decline are clearly the most difficult task confronting community leaders today. The skills required for these tasks have not been taught in graduate classes nor have most administrative leaders had the opportunity to develop the necessary skills on the job. The frustrations and anxieties caused by the imprecision of decision processes as well as increased demands for greater participation by internal and external constitutents will present even greater challenges to institutional leadership in the future.

The challenge to develop sound programs of institutional research is clear. The demand for better, more precise information that will support the forecasting, analytical, and operating needs of institutions is increasingly apparent. What must now be determined in most institutions is how to organize most effectively and efficiently to satisfy the planning, management, and evaluation needs of the organization. The solution to this problem will more than likely rest upon the caliber and skills of individuals heading the institutional research offices rather than on a prescribed remedy of some kind or a single plan for institutional research in community colleges.

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CONCEPTUALIZING COMMUNITY COLLEGE RESEARCH AT THE NATIONAL LEVEL

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ERIC Clearinghouse for Junior Colleges
University of California at Los Angeles

Describing the ERIC Clearinghouse to institutional research directors would be as fruitless as reciting the history of community colleges to an AACJC meeting. Nearly all of you have been contributors to ERIC and users of its documents and quite a few of you have been authors of articles and monographs published or sponsored by ERIC. So you are aware, as Dr. Cohen(2) told a similar group about a year ago, that:

> The Clearinghouse is a basic and continuing resource for the IR director, that the numerous studies that have been prepared by research officers provide an invaluable source for topics, designs, methodologies, strategies and the like, (and) that they show the range of what can be done.

The Thrust Toward Non-Traditional Study

As we review the current documents coming through the ERIC Clearinghouse, we note a remarkable change in the philosophy of community colleges. So dramatic is this change that if continued, it will transform the community college to some new kind of institution to which the term college will not apply. The recent action of the City Colleges of Chicago in naming two additional institutes may be a step in this direction. The change in philosophy involves raising the non-credit activities, courses, and programs to the level of credit courses. Were it not for the premium on credit-course funding, the scales would by now be tipped in favor of the noncredit courses.

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*John Lombardi represented Arthur Cohen, Director of the ERIC Clearinghouse for Junior Colleges, who could not attend the conference.

During the last five years, colleges have been reporting in their enrollment statistics participants in noncredit classes and activities. In the current (1976) Community, Junior, and Technical College Directory, there is a new column called "Community Education Enrollment". For October 1976, the community education enrollment for all colleges was more than one and one-third million compared with a regular enrollment of approximately 4.1 million. Within the next five years, the noncredit community education enrollment may very likely equal or exceed the credit-class enrollment.

This phenomenon is arousing favorable interest among administrators because it takes up the slack in the regular enrollment; it is raising questions among legislators because of its effect on financing; and it is being viewed with concern among faculty because of its effect on the nature of education. Although college and state reports contain many general references to it, information on this new category of enrollment, however, is still meager.

Parallel to this development is the reordering of priorities among the various college functions. In their national study on humanities, Cohen and Brawer(3) observed that although community college boards, administrators, and state-level planners see a plethora of roles for community colleges, "the perpetuation and diffusion of the humanities occupies a priority status far below that of career education, remedial studies, adult basic education and student guidance."

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The change in curriculum focus is also evident in the upsurge of career education enrollment. In the 1950s, if 20 percent of all students on a campus were in career programs, it was considered respectable. Today, anything lower than 40 percent is considered unsatisfactory.

Outreach Programs

These changes are part of the larger community-based, performance-oriented movement or of the thrust toward nontraditional study. On the organizational level, the movement has resulted in large networks of outreach programs fanning out to the remotest parts of the college service areas. These networks, in turn, are combined to form noncampus colleges. Of the eight noncampus colleges now operating, two started as noncampus colleges, and six were organized within multicampus districts. At least another half dozen are in the planning stage.

This development--the outreach programs and the noncampus colleges--has the potential for a tremendous amount of in-depth institutional research of a descriptive and evaluative nature. At present, there is only minimal information, mainly in official statements and accreditation reports. As a first step in this process, Roger Yarrington, vice president of the AACJC, and his associates feel there ought to be a major, national, well-documented research description of the community college(4).

While these developments are exhilarating to community college educators, there still remains the uneasy feeling that adding students, changing delivery systems, and taking the college to the students are not the whole story. The nagging question of "How well are we doing?" keeps popping up. Richard Hagemeyer(7), President of Central Piedmont College (N.C.), said at the 1976 AACJC conference:

> Our colleges are trying to be adult and community-based and that is a noble cause, but on that point we have trouble measuring effectiveness. Accountability breaks down in this area, not because it is less than desirable or because it is not as educationally sound, but rather because we have not learned to package and price this product in so far as these non-traditional students and programs are concerned.... Our impact upon these diverse community segments we attempt to serve must be measured.

In the spring 1976 *College Board Review*, Dorothy Knoell(10) wrote:

> The strength of the community colleges has been their ability to respond to state and local needs for new programs relatively quickly and without the infusion of new, special funds. Their weakness has been their inability to evaluate their success with successive groups of new students, except in terms of ever increasing enrollments of all types of students. Community colleges need to propose new criteria for evaluating student performance where persistence and grades are inappropriate, and to take steps to use new measures with the increasing numbers of new students who enroll.

Hagemeyer, Knoell, state legislators, and others are asking for new measures, new criteria, new definitions.

The Role of the IR Director

It is not for the IR Director to organize the new definitions. But he must be careful that his research designs fit the definitions that are created. One easy way of assessing community feelings about the new directions posed by off-campus programs is to apply one of the several goals inventories that have been developed in recent years. Drawing a proper sample of the district's population and adding what goals they think the college should be addressing can be helpful if done on a continuing basis. A one-shot or cross section of community attitudes is not much on which to base program planning. But a set of data collected with the same instruments and sampling techniques over a period of several years might be amazingly revealing. This type of information is important to collect because community college leaders continue to be astounded by the failure of their bond issues in the face of greatly augmented enrollments. Taxpayers' support for the college is not necessarily a result of citizen participation in college-sponsored events. Any information that would help in determining why this is so would be extremely useful.

The movement toward nontraditional study or community-based, performance-oriented education, as I have indicated, is leading to the formulation of a new definition of eduction that may free the colleges from the albatross of traditional educational accountability with its emphasis on grades and persistence. Obviously, grades, credits, and degrees are of little value to the elderly, to those who already have degrees or who do not need certification in its various forms. However, in substituting new criteria, the danger exists that they will intensify the handicaps of new students who need the trappings of grades, credits, and degrees. New criteria may be interpreted to mean that the new students "just don't have it and that they will have to be given something in order to have something"(6).

A task that will challenge the ingenuity of researchers is to assess what effects the feelings of invisibility and isolation have on people who are associated with outreach programs and noncampus colleges. President Smith(15) of the Community College of Vermont noted that one common feature of the noncampus colleges, "at once their greatest strength and liability," is their "invisibility with no physical image with which anyone connected with the college can maintain himself personally and professionally." The invisibility extends to students and faculty who "emerge from and blend back into the community." Invisibility also leads to a feeling of isolation on the part of instructors and other employees. Moreover, the advantages of flexibility, accountability, and responsiveness gained in giving up the physical structure and distinct culture of the campus are obtained by "the surrender of traditional reference points which bind campuses together."

In one way or another, those connected with noncampus colleges echo Smith's impressions. The Los Angeles Commission on New Dimensions(5) called attention to the problems created by "the very nature of the new institution," specifically: "The students would be even more transient than those of the other colleges. Dropping in and out would be even more pronounced. Many of the New Dimensions students would never see anything with which they would necessarily and specifically identify as a campus of their college." The administrators of Coastline Community College(13) believe that "A college without walls obviously cannot exist without some physical facilities--something with which a student can identify."

Invisibility and isolation are implicit in the first sentence of a brochure(8) admonishing the reader: "Don't plan to take a walking tour of the Pioneer Community College campus." The feeling of isolation caused by noncampus operations in many scattered locations with few opportunities for communication between and among faculty and students, was one of the first impressions President Tapper(16) of the Peralta College for Non-Traditional Study received soon after her appointment. It is not surprising to find among her plans for the immediate future the development of institutional involvement and commitment among all personnel.

William Keim(9), President of Pioneer Community College, wrote soon after becoming president: "I sometimes think that Pioneer is so far removed from the real world that I'm a lost soul from another planet and it is encouraging to hear from the far corners of the Universe." A similar feeling of lack of understanding, particularly by the Board of Trustees, was voiced by the Executive Director of the Los Angeles Commission on New Dimensions.

The IR Director is going to have to study the various aspects of off-campus and non-campus programs: Do the participants feel neglected or isolated? What is the effect of the lack of accessibility of library and other campus facilities? Any study that can point to similarities or differences in on-campus and off-campus education is going to be quite important as the trend toward non-campus-based programs accelerates.

The Question of Effective Teaching

The question of effective teaching has never been clearly addressed on the campuses and there is no reason to believe it will be resolved by studying the faculty at off-campus centers. Nevertheless, certain questions can be asked: Do the part-time faculty feel like second-class citizens? How does their status affect their teaching? The old question, "Is anyone learning anything?", arises anew in the off-campus setting. How can the "right" answers be obtained when, according to Richard Meeth(12), project director of the 1976 Change Report on Teaching: 2, there is "no consensus about what is important to improve" despite the existence of 80 college and university centers on the improvement of teaching? Meeth does not restrict his comments to the teaching of nontraditional students, as does Hagemeyer, or the successive wave of new students, as does Knoell. He includes all students, old and new, traditional and nontraditional. It may very well be that teaching the nontraditional or the new students is a more arduous tasks than teaching the traditional or the old students, but this does not diminish the universality of Meeth's thesis that the evaluation of teaching is a stateless art. This is discouraging, but research on teaching effectiveness must go on not because legislators mandate it but because researchers must continue to explore every avenue in the hope of finding a Rosetta Stone that will give the clues that link learning and teaching. Incidentally, after his bleak three-page essay on "The Stateless Art of Teaching Evaluation," Meeth, to help create a better base for evaluating teaching effectiveness, presents more than 30 reports on exemplary teaching. Some of this reasoning may account for the large number of documents received at ERIC on teaching methods and effectiveness.

In this paper, I do not wish to give the impression that the new forms will completely displace the old ones. Far from it. For as many years as we can safely predict, traditional learning will continue side by side with the nontraditional. In fact, much of the traditional is currently incorporated in the nontraditional in poorly disguised form. So for the researcher the old topics will still be around. But in nearly all areas, nontraditional study exacerbates old problems and introduces new ones. One need only mention teaching effectiveness, part-time students, part-time faculty, collective bargaining, faculty workload, tenure, financing, government patterns, and tuition to realize not only how much more complicated research has become during the last five years but how much more needs to be done. For example, research on workloads of full-time instructors teaching full-time students at fixed locations in traditional settings has proved exceedingly difficult; research on workloads of full- and part-time instructors teaching at several locations and using nontraditional delivery systems will be a much more complex project.

Technical-Vocational Education

While reviewing the documents received at ERIC, I picked a few that may be of interest to you because they are receiving national or regional attention. Flow studies continue to be prominent among state and local documents with a large number relating to follow-up of technical-vocational graduates. Since January 1975, ERIC has processed 18 follow-up studies in technical-vocational education. The emphasis on the technical-vocational is understandable in light of the enthusiasm for career education. In return for generous state and federal appropriations, educators are being pressed for evidence that career education is not only prospering in the colleges but that students in the programs are being prepared for and are getting jobs related to the programs. Perhaps the report by Wilms(17) that "only two out of ten graduates from both the public and proprietary schools who chose professional or technical-level training ever got those jobs" may also have spurred activity in this area.

A 1976 follow-up study(14) covering the graduates of the 13 regional institutes of the Indiana Vocational Technical College is more favorable than Wilms' study. With a 58 percent response, the study found that 449 or 83 percent of the respondents were employed in jobs related to their IVTC training. Of interest to researchers is this paragraph in the Background Statement of the study:

> A continuing major problem is separating the "value added" by the school experience as compared to the effects of non-school activities. Therefore, the findings of the follow-up studies should be viewed as components of a comprehensive system for evaluation of instructional and supportive services.

Many of the follow-up studies of graduates of occupational programs received at the Clearinghouse have clear research designs. Their population is well defined, sampling techniques are consistently applied, questionnaires are thoughtfully constructed, and data and recommendations are clearly reported. Many studies fall short of the mark. As you are well aware, survey techniques and sampling procedures have been refined so that there seems no excuse for the basic errors that are made by many IR directors who set out to assess program graduates. An IR director might develop and publicize a statement of the procedures he would employ in working with any program director to assess the graduates of that program. The same techniques can be used for most occupational program follow-ups, and if similar formats are employed, multiple studies can be conducted at minimal cost.

Another type of flow study involves the reverse transfer students (those who transfer from four-year to two-year colleges) who are enrolling in larger numbers than before the recent economic downturn in employment of graduates of four-year colleges and universities. Interest in this group is so widespread that a review of the literature by Ms. Robbie Lee(11) of the ERIC staff has been prepared for publication in the Community College Review. Although Ms. Lee cites many studies touching on reverse transfer students, she considers most of them inadequate "because of the paucity of data available, the small samples studied, and the contained geography. Moreover, the rapidly changing student population and the expanded definition of reverse transfer require new approaches to this topic."

The studies of reverse transfer students to date have been limited for the most part to head counting. It is time to move into another phase. Some of the reports coming into the Clearinghouse include interview data and confirm the supposition that some populations, at least in the initial stages of study, may well be addressed through the interview technique. By doing carefully structured interviews on an age-graded sample of your colleges' reverse transfer population, some of the important reasons why this group has grown so large may appear. The interview is a useful technique for determining the proper questions to ask in a broad-scale study.

An area that is hardly touched by researchers is the effect that increasing tuition has had on enrollment and on the composition of enrollment. One of the findings of a recent study of Bishop and Van Dyk(1) on institutional and adult participation in higher education was that when tuition was eliminated, the college attendance rate of adults doubled. Is there a converse to this finding?

By contrast, one of the most popular subjects of research is the part-time instructor. It seems as if every institutional research director, every professional association, and some state offices have produced a study on this topic. And the end is not in sight because there are many facets to this subject including possible legislation or court action.

A Growing National Concern

The concern with research on a national level comes at an appropriate time in the history of the community college--a time when it is recognized as the most dynamic segment of the higher education and seemingly immune to the population slow-down, a time when it is undergoing changes in its mission, organizational structure, and student composition. In adult education, this change impinges on other segments of education, and in the community education area, on public and private agencies in the social services area. It is also a time when research on the local, state, and national level is accepted more universally than ever before. What is most reassuring is that there is a greater awareness on the part of community college leaders of the need for continuous assessment of the various aspects of the enterprise. That we have not been successful in measuring effectiveness is discouraging, but our recognition of this lack of success will result in renewed efforts in this area. It is also encouraging that research on the institutional and state level is becoming more widespread and that research organizations and foundations are giving more attention to the problems of the community college.

At ERIC, I find that research at all levels interacts, and institutional research directors are becoming less parochial. More significant is that researchers outside the institutions are associating more closely with those inside and are making extensive use of institutional research. The requests that come to ERIC from those planning national studies are encouraging. During this year, there were requests for searches on part-time faculty, flow studies, effect on enrollment of the opening of a new college, criteria for introducing a new program and for dropping a program, courses most likely to drop in attendance when total enrollment drops, and information on systems of governance which describe state and local relationships. I am optimistic about national (and institutional) research during this period when the community college is experiencing a profound change institutionally and educationally.

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DEVELOPING ISSUES AND COMMUNITY COLLEGE RESEARCH

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The Planning Problem

The predominant issue at this time appears to be the nature and locus of planning for community colleges in the late 1970s and beyond. It is quite clear that planning modes which worked well in the past, in an era of rapid growth, are no longer appropriate. Failure on the part of the colleges to adopt an aggressive new planning mode might well result in the locus of responsibility for planning being moved from the campus/institutional level to that of the state planning agency for postsecondary education, the legistlature, the state finance agency, or some other noneducational entity. The problems which community colleges face are basically those of declining state funds, pressures to provide opportunity for postsecondary education for ever more diverse student clienteles, and the absence of long-range goals and values to serve as a framework within which to establish priorities.

Past planning for community colleges tended to be mechanistic but effective as an essentially responsive, reactive mode. Enrollments were projected for five- and ten-year periods, using past participation rates of recent high school graduates and others; facilities plans were developed for new campuses/institutions and additional facilities on existing campuses; educational/occupational programs were planned for the projected enrollments, and faculty and staff recruited to work in them; and, finally, when increased funds were needed to accommodate the accelerated demand for postsecondary opportunity, bond issues and tax proposals were submitted to the voters.

These planning efforts were highly successful, in California and elsewhere, insofar as they resulted in buildings being built, faculty being on board, and college catalogs being printed in time for the new students who enrolled each fall. However, the operational goal of such planning was simply to be responsive to local needs for postsecondary opportunity--first, the needs of lower middle class students who were either unprepared or unable to pay the cost of university enrollment as freshman; then the needs of ethnic minority groups, many of whose numbers were more disadvantaged than Caucasians from the lower middle class; and thence the needs of the unemployed, adult women, others whose education had been interrupted, senior citizens, the physically handicapped, the mentally and emotionally handicapped, and the institutionalized (prisoners, rest-home residents, and others who could not come to the campus).

Responsiveness to diverse clienteles has been tacitly assumed to be highly correlated with effectiveness. Institutional master plans began to incorporate sub-plans for programs and services to the disadvantaged, affirmative action programs for students and staff, adaptation of facilities and programs to accommodate the physically handicapped, and outreach programs for those who found it inconvenient to come to the campus. Evaluation often stopped with an assessment of the extent to which plans were implemented--for example, the enrollment of students with specified characteristics and the development of special programs and services. At best, evaluation included the sampling of attitudes and opinions of students and staff about the opportunities offered. The absence of evaluation activities paralleling the planning effort is a serious omission when attention is not given to student outcomes, costs once programs are operational, and long-term impact on institutions and the community.

It is proposed that future planning in community colleges should be goal- and value-oriented, proactive so as to point college development in desired directions, and with evaluation of effectiveness as a vital component of planning and development. It is assumed that active planners can have some control over the destinies of their colleges, in ways other than simply cutting budgets and limiting opportunities. The research role is obviously quite different from that played in a reactive planning mode, that is, planning in response to increasing demands for postsecondary opportunity. The aggressive research worker will participate as a planning team member in constructing possible futures for the college, choosing goals and objectives related to preferable futures, designing courses of action likely to take the college in desired directions, and evaluating the extent to which the college is so moving.

Community colleges have seldom subscribed to the notion that they should be "all things to all people," although past planning activities sometimes appeared to support this idea. It is quite clear now that priorities will have to be set among clienteles, programs, services, and delivery systems as part of planning for the future. The process will be less arduous if planners have long-term values and goals available to them as guides in establishing priorities, as well as the results of evaluations of effectiveness, including costs, of past efforts to serve particular clienteles.

Subissues in Planning

The first subissue of strong current interest is the extent to which pressures for (1) regionalization and (2) intersegmental cooperation will reduce institutional autonomy in planning and management of resources. Postsecondary planning has traditionally been horizontal in nature with each type of institution developing its own plans which are then aggregated at the state level as a plan for that segment or system such as public community colleges. In recent years, laws have been enacted in several states which either encourage or mandate cooperative planning and development on a regional basis, often cutting across both community college district lines and involving different types of institutions (public and independent, degree-granting and with non-credit offerings). Such cooperation may result in savings to community colleges with no diminution of services to residents of the region. However, autonomy in planning to establish priorities among clienteles and programs will be reduced and evaluation of effectiveness will be more difficult to perform by researchers at particular institutions.

A second subissue of growing importance is the extent to which manpower needs (local, regional, and state) should influence program development and continuation in the community colleges. The oversupply and underutilization of trained workers in some fields appears to have greater potential impact on planning than the shortage of trained workers in other fields. The issue becomes critical when student demand for training in fields with excess manpower is high and the cost of offering the programs relatively low. A different type of problem arises from planning to discontinue occupational education programs which are no longer needed, in which there are tenured faculty who are not prepared to teach in other fields. Past planning has produced an ever-increasing diversity of occupational curricula to prepare students for employment in fields for which the need for a community college program has at some time been demonstrated. Future planning modes will, of necessity, deal with priorities among new and ongoing programs, taking into account not only costs and need, but also community values and college effectiveness in producing such trained manpower. Still another related subissue of particular importance to community colleges is the proportion of students who should receive specialized training for employment, given the fact that less than two-thirds of the labor force needs such training beyond what can be given on the job in a matter of hours or days. Pressures are now on students to enroll in programs in which they acquire particular employment-related skills, regardless of society's need for the large numbers so trained. The problem is a vexing one for institutions which for many years were concerned about the disinterest of students in occupational education.

The apparent insatiable demand for adult and continuing education during a time of limited financial support for the community colleges is producing still another subissue in planning. In essence, the issue is the proper role of the community colleges vis-à-vis the public schools and other institutions of postsecondary education offering noncredit courses and programs to local residents who are beyond compulsory school age. The courses at issue range in educational placement level from elementary school subjects for the illiterate, through lower division programs, to continuing in-service education for technicians and professionals who do not need college credit for such experiences. The issue is often resolved by tradition and/or negotiation among the various parties which are legally authorized to offer such programs. In other situations where negotiation fails, the result is duplication of opportunities for some clienteles and the neglect of others, usually the poor and undereducated. There is little research available on the effectiveness of adult and continuing education programs offered by different types of institutions, as a basis for future planning in which priorities must be established and choices made. A critically important subissue is basically the question of financing adult and continuing education and the extent to which users should be expected to pay the costs. High enrollments and a high degree of satisfaction among enrollees in current programs are inadequate measures of effectiveness in a time of scarce funds for community colleges.

A fourth subissue involves the use of publicly funded student financial aid to achieve institutional goals developed as part of a long-range plan. The federally funded Basic Opportunity Grant program has done a great deal to reduce institutional involvement in the awarding of student aid based solely on need. Still, the vastly increased amount of student aid now available to community college students and others makes it imperative for planners and researchers to add student aid to the more traditional dimensions of college planning--that is, enrollment projections, program development, delivery systems, and costs. Questions of effectiveness which may be researchable include the following:

1. How can student aid funds be administered so as to open up postsecondary educational opportunity to types of students not now fully served (as opposed to aiding those already coming to college who have unmet need)?
2. Will increases in students aid result in increased persistence to degree and other objectives on the part of those awarded such aid? Should it be used to enable part-time students who are employed off campus to enroll full-time?
3. What is the effect of student aid on choice of institution, attendance pattern, and field of study and/or career?

Issues in Federal/State/Institutional Relations

The issue which appears most ominous for the community colleges in the late 1970s is the increasing demand for comparability of definitions, data, and information for all types of postsecondary institutions. The demand is being pressed by both the state and federal governments, sometimes in ways which are in conflict. The issue is embodied in the recent attempt of the USOE National Center for Educational Statistics to develop under contract a manual of postsecondary student terminology--terms, definitions, and guidelines for records and reports about students in postsecondary education. The manual attempts to standardize terms and their definitions not only for degree-granting institutions, including community colleges, but also for specialized postsecondary institutions which do not operate on a system of credit hours, semesters or quarters, or degrees awarded.

Standard terminology is urgently needed to facilitate the collection of comparable information about costs, productivity, persistence, and other outcome measures from widely diverse types of postsecondary institutions and programs. On the one hand, community colleges are to be compared with adult schools operated by K-12 school districts, publicly funded area/regional occupational centers, and proprietary schools offering vocational/technical training. At the other extreme, community colleges must develop data and information which will be comparable to that furnished by both public and independent colleges and universities offering lower-division programs! It is of little use to point out that community colleges are different from each and all of these postsecondary institutions and that attempts to obtain "comparable" information do violence to the uniqueness of the community colleges. Instead, research workers and others must begin to cope with the issues of comparability by proposing areas where new agreement might be obtained about common definitions and measures of costs and outcomes.

More frustrating but less threatening is the issue of the ever-increasing requirements for state and federal reporting by postsecondary institutions, all of which tend to reduce the amount of staff time available for active planning and evaluation. The announced intentions of the federal government to hold constant or reduce reporting requirements have been accompanied by increased complexity of

HEGIS (Higher Education General Information Survey) reports with respect to ethnic-racial data. Attempts by the states to coordinate and thus control the volume of required reports may result in an additional burden to institutions which must reprogram their computers, revise forms for data collection, and make other changes in the ways they have traditionally produced the required reports.

Two subissues related to reporting requirements appear worthy of mention. The first is the ability of the community colleges to have impact on reporting requirements for all postsecondary institutions when they are changed at the state or federal level. The historical place of the community colleges somewhere between the public schools and higher education has meant often that the two-year colleges have had least impact and suffered the most from imposed reporting requirements. The second subissue concerns the utility of the required reports for institutional planning, management, and evaluation. Institutions tend to view such reports as necessary burdens to staff and to ignore the potential usefulness of the data for local operations. HEGIS and similar reports have the advantage of producing data from a common set of definitions used by all institutions in all states and of yielding low-cost computer tapes annually which can be used to obtain comparative data over time and between and among institutions and states. The standardization of data is of course both an asset and a liability for community colleges in that some definitions are a poor "fit" for their operations and others are too gross to be useful in local analysis. Still, HEGIS and other federal and state reports can provide the basic data for the annual monitoring of the condition of postsecondary education in the particular institution, system of postsecondary education, and/or state. Such monitoring should show trends and other changes in selected aspects--for example, degrees and certificates awarded by discipline--which can be analyzed in terms of plans and projections for the institution.

The Evaluation of Effectiveness

It is well known that the faith of the public in higher education as the producer of better jobs, higher income, and more comfortable living generally for those who partake of it has diminished in recent years as a result of many factors beyond our control. While public confidence in higher education does not appear to have reached the level of distrust which has been experienced in politics and government recently, there is need to find ways to demonstrate to legislators, state executive officers, and even lay boards that community colleges are effective in performing their assigned functions. Traditional indices of effectiveness are no longer sufficient--accreditation, increasing enrollments, favorable student attitudes and opinions, transfer student performance, and placement of graduates of occupational curricula. All of these may be necessary but are not sufficient measures of effectiveness in an era of limited state funds for the support of postsecondary education.

Institutional research encompasses much more than the evaluation of effectiveness, but evaluation is viewed as one of the most important components, particularly as it relates to planning. It is proposed that a comprehensive program of evaluation in community colleges would include each of the following, with variation in scope and intensity dependent upon local circumstances:

1. An annual quantitative description of the condition of post-secondary education at the particular institution, with trend data and statewide and/or national statistics, as appropriate;

2. A qualitative analysis of selected aspects of the institution's condition that relates what has been observed to what was projected and planned; in other words, an analysis of whether the institution is growing and changing in desired directions or remaining in a preferred status quo condition;

3. An annual assessment (using data collected routinely for other purposes) of the extent to which particular goals and objectives in the institution's plan of development have been achieved such as implementation of an affirmative action program with specified results for a particular period of time;

4. Periodic (perhaps every five years) evaluation of instructional outcomes related to institutional objectives (usually requiring special data collection) such as competences expected from general education programs; writing and computational skills displayed by graduates; and

5. Participation by research staff in the evaluative aspects of special programs for particular clienteles--for example, educational opportunity programs and services for the disadvantaged.

Conclusion

There is a stronger need now than ever before for institutional research staff to be active participants in community college planning to insure that institutions are developing in desired directions. A major impetus for this activity is the necessity to make choices and set priorities because of expected limitations on funding which are likely to extend well into the future. While community colleges may continue to grow, it seems likely that future growth will be controlled so as to give priority to certain clienteles, programs, and delivery systems. Legislators and others outside the institution will set priorities and limitations if institutions do not do so in an effective manner.

The most important issue now facing community colleges is believed to be the nature and locus of planning for the future. This belief rests on the assumption that colleges can speculate about alternatives, specify values and goals, establish priorities, and decide on preferable futures that are possible under the law and in the particular community setting. When planning is done in this fashion, the evaluation of institutional change in terms of the specified futures is a complementary activity. Thus, institutional research workers can use their talents to contribute to both planning and evaluation.

THE CASE FOR STATEWIDE COORDINATION OF INSTITUTIONAL RESEARCH IN THE COMMUNITY COLLEGES

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Introduction

The need for information about community colleges at the state agency level has increased substantially in recent years primarily because the amount of state funding for the community colleges has increased very dramatically. Data requests by the legislative staffs, the budgeting agencies, and the governor's office often seem unreasonable, are often demanded on short notice, and the data that are obtained are often misused. For these reasons, most institutional researchers have very negative reactions to any state agency surveys or data requests. However, it is usually not prudent to deny data to the legislature or the budgeting agency that is going to be asking critical decisions about funding community colleges; therefore, the prudent approach is to develop a well-designed system of needed information about community colleges at the state level, a system that will be able to respond to the majority of data requests with validated and well-presented information.

To achieve this goal, a positive rather than reactionary approach to state-level institutional research must be established. Such an approach is necessary because: 1) there is an urgent need for state-level information about community colleges which critically affects decisions on state funding, program and course approval, and other important policies; 2) there is a need for comparable data about community colleges for local and state uses; 3) there is a need for coordination of the research effort among the various institutions within the state; and, 4) there is a need for state-level leadership in institutional research in the community colleges.

State-Level Needs for Information

Many important decisions are made about community colleges at the state level, often in haste and sometimes with very little hard information to help in the decision process. The community colleges must compete for limited state revenues with many other institutions in the various state agencies and the legislature. For these purposes, it is not only important to have the relevant financial information but also information which shows community college outputs. In addition, many states control the program- and course-approval process for the community colleges at the state level as well as a number of state policies which affect the colleges at the local level. Decisions of such magnitude demand well-developed and well-defined data about community colleges. To meet the state-level information needs, the institutional research effort at the state level must consist of developing precise and common definitions, comprehensive management information systems, well-designed surveys, and statewide follow-up studies of students. Types of information most often used at the state level in Illinois are the following:

1. Course and Curriculum Inventory (on-line computer file)
2. Student Enrollment Data (on-line computer file)
3. College Budget and Audit Data (on-line computer file)

4. Unit Cost Study (computerized)
5. Facilities Inventory and Utilization (MIS-produced)
6. Faculty and Administrative Salary Survey
7. Faculty Utilization Reports (MIS-produced)
8. Student Follow-up Studies
9. Master Planning Data

Need for Statewide Comparable Data

One of the major difficulties with statewide data is the lack of comparability among institutions due to the use of different definitions, procedures, and methods. This not only limits use of data by the state, but also the local college's use of statewide data or data about institutions which is needed for comparative self-analysis. The state agencies which coordinate the community colleges have a unique opportunity and an obligation to work with the colleges in adopting common definitions and common procedures for obtaining data routinely needed for statewide analysis.

In Illinois, the public community colleges utilize the following common definition directory and manuals which were developed by representatives from the colleges and the ICCB staff:

1. Data Base Directory (200-page document of definitions)
2. Uniform Accounting Manual
3. Management Information System Procedures Manual
4. Unit Cost Study Manual
5. Occupational Follow-Up Study Manual
6. Resource Allocation and Management Plan (RAMP) format.

The Need for Statewide Coordination

There is also a great need for statewide coordination of needed research in community colleges. The statewide follow-up studies of students are prime examples of such needed coordination. In a statewide transfer study, it is essential to obtain the cooperation of senior colleges in providing data in a prescribed manner about the progress of these students at their institution. It is likewise necessary to agree on what methods and procedures to use in reporting the data from community colleges to ensure comparability. Coordination is also essential in identification of needed statewide research projects and obtaining the necessary cooperation and support from each of the various groups that must participate to make the project possible.

In Illinois, the ICCB has a Research Advisory Council consisting primarily of institutional researchers at the community colleges as well as representatives from the Council of Presidents, the Trustees Association, the Faculty Association, the Students Organization, and the senior institutions. This group has served as an excellent coordinator for statewide research efforts in Illinois. The present Statewide Occupational Follow-Up Study was initiated primarily as a result of the efforts of the Research Advisory Council.

The Need for State-Level Leadership

Although some community colleges have excellent institutional research programs, the majority of them are very inadequate in this area. A survey of the institutional research function in Illinois community colleges conducted in 1973 showed that only about one-fourth of the colleges had full-time institutional researchers and that often these persons had many other responsibilities. A national survey conducted in 1972 showed similar results. Hence, most community colleges need leadership and encouragement at the state level to help in identifying the basic institutional research projects and in getting them accomplished. The responsible state agency can mandate certain basic research studies and provide the necessary procedures manuals and workshops. Two good examples of this type of study in Illinois are the Unit Cost Study and the Occupational Follow-Up. Each of these has a manual which prescribes the procedures and methods to be utilized, and several workshops have been held throughout the state with college personnel responsible for each of these studies helping to explain the procedures and resolve any problems. The ICCB provides computer processing for the Unit Cost Study for all colleges and sends the detailed Unit Cost Study reports back to the colleges for their use.

Activities I would classify under the area of state-level leadership in Illinois are as follows:

1. Workshops and seminars on follow-up studies, unit cost studies, planning, and management information systems
2. Development of a file and bibliography of research studies in community colleges
3. Adapting definitions and coding systems which are nationally accepted such as the HEGIS and NCHEMS classification systems
4. Provision through the MIS of certain basic utilization reports for each college including comprehensive facility utilization reports and faculty productivity analysis

5. Requiring basic studies such as unit cost and follow-up of students but providing manuals, standardized instruments, computer processing, and assistance through workshops.

Conclusion

Although statewide data are difficult to provide, the people making decisions at the state level utilize whatever data is available. Often rumors and hearsay are given undue credit because data is not available to reveal the actual situation. Hence, lack of data or lack of valid data can lead to decisions that might severely hurt the community colleges within a state. For this reason, I am advocating a positive approach to institutional research at the state level. By this I mean that a well-developed system of providing needed statewide information about community colleges must be designed and implemented. This system must be used on common definitions and procedures and must include a management information system component as well as a research effort. A positive approach to institutional research at the state level will provide not only adequate information at the state level but also statewide comparability of data, statewide coordination of research efforts, and leadership for institutional researchers in the community colleges.

A USER-ORIENTED APPROACH TO PROGRAM EVALUATION

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There are two phases in program evaluation. The first phase deals with the design and development of the report, and the second with the role of this report in relation to the user. There are many factors that affect the teaching-learning process, and many of them are quantifiable. It may be useful to detail some of these factors, examine an evaluation model, and explore facets of the evaluation process that bear on the effective use of data.

Institutional research concerning faculty often involves analyzing faculty characteristics in terms of tenure; rank; years of previous and current service at the institution; evaluation by administrators, peers, and students; patterns of utilization of facilities, which may include scheduled use of classrooms and nontraditional settings; use of media hard and software; and use of community resources.

Institutional research concerning students often encompasses enrollment reports and projections; demographic data including such pretenure factors as age, socioeconomic status and expectations; compilation of tenure factors detailing the college experience; and posttenure factors, which may include student, faculty and employer's perceptions of the college experience.

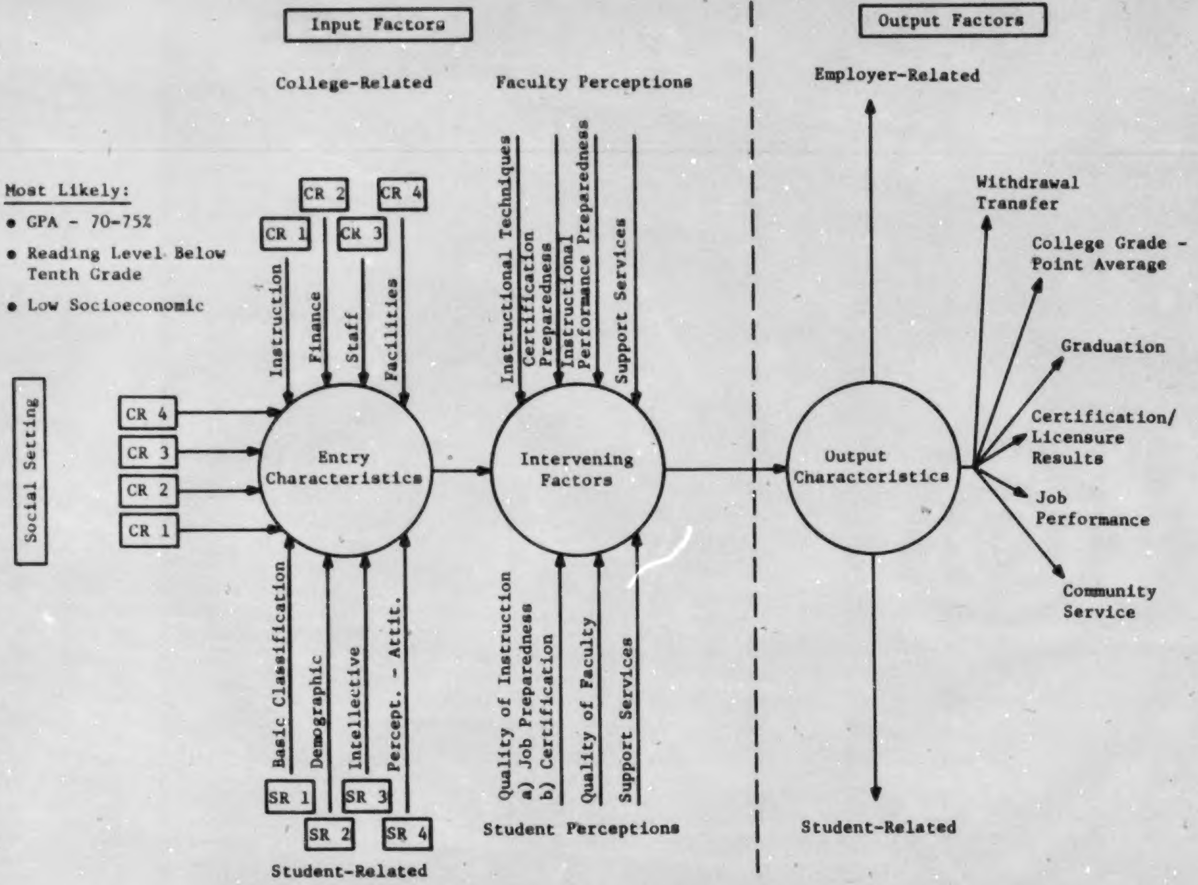
Administrators are concerned with program evaluation in terms of factors related to cost analysis, income, and expenditures; data assessing course loads in terms of frequency requirements; sequence and alternative course modules; transcript analysis for patterns of grading; and transcript analysis for prediction of student success. All of these factors should be related to community data indicating job market projections and employer needs.

Model A on page 137, developed by Alfred and Beitler(1), indicates the relationship of specifically designated input-output factors. It was used in the evaluation of programs within the Division of Allied Health at New York City Community College.

In his Discrepancy Evaluation Model for program improvement and appraisal, Provus(3) describes four stages for consideration in the implementation of a new program. The design sets forth the standards on which a program is established and provides the basis for assessment. Installation focuses upon the extent to which program activities have been identified and attention has been given to corresponding task assignments within realistic time limits. Interaction focuses on the appropriate procedures for communicating to the faculty, college administrators, staff, and students the objectives and philosophy of the program and the services it provides. The evaluation stage should examine the degree to which the specified objectives in the project design have been met.

The program design details the standards, directions, and strategies for the implementation of the program. It establishes initial objectives, major strategies for achieving these objectives,

Model A


Input Factors
College-Related
Faculty Perceptions
Output Factors
Employer-Related
Most Likely:
• GPA - 70-75%
• Reading Level Below Tenth Grade
• Low Socioeconomic
Social Setting
CR 1
CR 2
CR 3
CR 4
Instruction
Finance
Staff
Facilities
CR 4
CR 3
CR 2
CR 1
Entry Characteristics
Instructional Techniques
Certification Preparedness
Instructional Performance Preparedness
Support Services
Intervening Factors
Output Characteristics
Withdrawal Transfer
College Grade - Point Average
Graduation
Certification/ Licensure Results
Job Performance
Community Service
Basic Classification
Demographic
Intellective
Percept. - Attit.
SR 1
SR 2
SR 3
SR 4
Student-Related
Quality of Instruction
a) Job Preparedness
b) Certification
Quality of Faculty
Support Services
Student Perceptions
Student-Related

and specific activities for each strategy. In Model B on page 139. Lachat(2) describes an objective appropriate to the design phase of a program. Objective II was identified by the project coordinator. Responsibility for each activity was assigned to a staff member, and time lines were established for out-components of each activity as illustrated in Model C on page 140. This provides the basis for assessing the discrepancies between objectives (standards) and output (results) at interim periods.

A staff management system can be used to track areas of responsibility and accountability that have been previously defined. The role of each staff member should be delineated in terms of: (1) the person to whom he or she reports, (2) the people he or she supervises directly, (3) major responsibilities, (4) working relationships, and (5) position tasks and the time required for them. After specific task assignments are made for various staff members, monitoring procedures should be carefully defined. Meetings must be regularly scheduled with staff members in order to assess progress.

The relationship between processes and interim products, as they relate to the objectives specified in the project design, must be examined. Discrepancies between processes and planned activities should be examined in terms of their impact on the development of project products and the achievement of project objectives (see Model D on page 142).

The implementation of a tutorial service (see Model B), for example, might not have been possible if there had been no congruence between the intended activities and the actual activities.

MODEL B

OBJECTIVE II

Students enrolled in target freshmen courses for Allied Health Career programs will become more proficient in their application of learning, study, and test-taking skills.

STRATEGIES

I. Adjunct personnel will develop and implement minicourses relating content and learning skills in target required freshmen courses for Allied Health career programs.

II. Learning Center staff will provide a tutorial assistance training program to enable qualified tutors to function (a) in an individual tutoring situation, (b) in seminar sessions, (c) as a tutor-in-residence, and (d) as a within-the-classroom assistant.

III. Comprehensive tutorial services will be provided for students enrolled in career programs in the Division of Allied Health.

MODEL C
ACTIVITIES RELATED TO STRATEGIES FOR ACCOMPLISHING OBJECTIVE II

ACTIVITIES	RESPONSIBILITY	TIMELINE
1. Meetings will be held with faculty members of target required freshmen courses to	Coordinator	Oct. for first semester courses
a. obtain their support in developing mini-course sessions to apply learning, study, and test-taking skills to specific content areas. b. request them to highlight aspect of courses which are in need of program support. c. obtain course materials and outlines.		Feb. for second semester courses
2. Mini-courses of six, one-hour sessions will be provided for target required course in Allied Health career programs	Designated Adjunct Personnel	March - 3 sessions April 3 "
a. Test-taking techniques - 2 sessions b. Career vocabulary - 2 sessions c. Application of math processes to content curricula - 2 sessions.		
3. Procedures will be finalized with the Tutorial Center for the coordination of services through the Allied Health Learning Center	Coordinator	First week of Feb.
4. Division students will be identified who have been excessively absent, are in danger of failing, had dropped a course one semester and had re-enrolled or have shown a low profile in diagnostic and/or entrance exam.	Coll.Lab.Tech.	Dec.-Jan.
a. Form letters will be sent to identified Division students describing tutorial services available through Learning Center		First week Feb.
b. Prospective tutors will be identified		January

MODEL C (continued)

ACTIVITIES	RESPONSIBILITY	TIMELINE
5. Three tutor training sessions will take place related to: a. one-to-one tutoring techniques with an emphasis on the dynamics of interpersonal relationships. b. seminar tutoring with emphasis on group relations c. assistants within the classroom situations with an emphasis on faculty tutor tutee relationships d. procedures for accurate record keeping and follow-up of excessive student absence e. the use of tutor-tutee log f. the use of existing and newly developed materials for departments in the Allied Health Services	Coordinator & Coll. Lab. Tech.	February
6. Tutor tutee record (logs) will be reviewed weekly to monitor tutorial procedures and will be available for review by faculty	Coordinator	weekly throughout 2nd semester
7. Third session evaluations will be held for each tutor-tutee situation	Coll.Lab.Tech.	throughout 2nd semester
8. Multi-media instructional aids for reinforced learning will be developed	Adjunct Personnel & Media Coord.	throughout 2nd semester
9. A final report on numbers of tutors and tutees participating in program, types of sessions utilized and materials used will be submitted to the Project Coord.	Adjunct Personnel & Media Coord.	throughout 2nd semester

MODEL D

INTENDED ACTIVITIES	Congruence	ACTUAL ACTIVITIES
INTENDED A OUTCOMES	Congruence	ACTUAL A' OUTCOMES

At this stage the identification of discrepancies between intended activities (plans) and actual outcomes (products) does not necessarily have negative implications. Evaluators have in the past and can now document modifications in operations that may be situational responses to specific conditions. But the absence of the necessary facilities, for example, might severely impede various activities so that products cannot be delivered by a specified time.

The Role of the User

Often the thickness of a report is inversely proportionate to its shelf life. In order to ensure that the product of evaluation will not be relegated to a shelf until it is outdated and useless, we must change the role of the user from a passive to an active one. Reflect on the following:

From Whose Vantage Point Will Judgements Be Made?

I. Who is the audience who will read the report?
Will they have a voice in the design of the evaluation?

- A. Administrators
- B. Department chairpersons
- C. Faculty
- D. Students
- E. Employers

II. Who compiles and examines the data?

- A. Nonvested interests
    1. Outside the college
    2. Inside the college
- B. Possible vested interests
    1. Program coordinator
    2. Department chairpersons
    3. Dean of the division
    4. Faculty

III. Are the procedures for collecting data viable?
Are the source and the organization of the data credible?

- A. Quantitative data
    1. Entry--pretenure
    2. Interim--tenure
    3. Output--posttenure
- B. Qualitative data
    1. Questionnaire
    2. Interview
    3. Seminar or conference
    4. Standardized tests
    5. In-house tests

IV. Are the indicators for measuring success considered valid by the user?

- A. Patterns of utilization of services
- B. Nature of clients
- C. Perceived effectiveness

To provide a viable evaluation product, the users should be encouraged to participate in determining the components to be included in the final report. The results of investigating a sequence of specified activities (teaching methods, content, facilities, and so forth) must be communicated to staff members at all levels, and their recommendations must be heard so changes conducive to the attainment of the program objectives can be implemented.

Evaluation should be concerned with the immediate and summative products--the processes and activities leading to the product. Appraisal by evaluation, with the help of the user, in the interim stages of the program can provide early insights, and then the program can be revised in progress to enhance its success. Open channels for communication, both vertically and horizontally, with involved staff and faculty are a must if the evaluator is to be effective. With such communication, the formative evaluation can become part of the decision-making process, and the evaluator can be perceived as a helper who will reinforce good performance and suggest corrective alternatives.

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MANAGEMENT AND RESEARCH: AN ESSENTIAL PARTNERSHIP?

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In the midst of insistent demands for accountability, self-analysis by educational institutions is now an urgent necessity. Research and development in both community and private junior colleges is taking on new dimensions. In the collection and analysis of pertinent information, great emphasis is being placed upon data bearing directly on decision making rather than on mere presentation of statistics in support of some theoretical design.

As Schofer and Turner noted in a 1970 topical paper to the Florida Community Junior College Inter-Institutional Research Council:

> The last few years have seen a growing inquiry into whether community colleges are, in fact, fulfilling the high aims once so confidently announced. Though still muted, demands for evidence are beginning to be heard. Even the most ardent proponents of the movement appear to recognize shortcomings and a consequent need for a firmer base for institutional philosophy and methods that would come from empirical study.

Snyder, in ERIC Junior College Clearinghouse Topical Paper 30, 1972, has observed:

> The press for accountability has descended on the two-year college and cannot be put off. Legislators, board members, taxpayers, even students and parents, are asking the college to account for its efforts and resources. It must respond, for the alternative to self-examination and direction is submission to interests beyond the college. These conditions have given critical impetus to the role of the institutional researcher.

For an institutional research program to be of maximum value to an organization, it should embrace ongoing assessments of:

(1) allocation of resources, (2) student potential, (3) institutional achievement, (4) curriculum and program needs and ordered priorities, and (5) community impact of the college.

What follows are the highlights of how one small-enrollment (650 students), private, independent junior college for women analyzes its efforts as a learning center for young women.

At Harcum, institutional research is a shared activity. Faculty participate in policy deliberations through four active committees, a Faculty Assembly, and a College Council. In 1970-71, of some 72 policy and procedure actions recommended by these groups, 21 were based, in part, upon documented research inquiries by various faculty members. In addition, at the request of these various committees, the Office of Research conducted 14 additional inquiries furnishing information which facilitated subsequent deliberations and decisions.

To help insure an orderly, ongoing, and comprehensive program, we used a checklist of areas for inquiry, which has been a very useful guide at Harcum--both for cyclical, long-range trends analysis and planning as well as one-shot inquiries to collect data for the resolution of immediate problems and concerns. Since 1963, the Office of Research has prepared some 420 research reports, memoranda, and briefs as well as 120 published articles.

The various studies, inquiries, and investigations we conducted during 1971-72 may be conveniently grouped into three categories:

(1) Experimental Research (40 percent): These generally involved the experimental manipulation of selected (independent) variables, often with the use of experimental and control groups to

note what effects, if any, occurred in the criterion (dependent) variables.

(2) Survey Research (50 percent): Researchers collected data by questionnaires, analysis, and records of interviews taken from samples of whole populations.

(3) Historical Research (10 percent): These particular records analyses sought answers to questions by referring to valid college records and the institutional research offices subsequent statistical treatment of the historical data.

The principal techniques that have been utilized for data collection have included: before-and-after evaluations; checklists; correlational studies; interviews (both structured and open-ended); tests and inventories (including academic achievement, skills, and personality assessments); observation schedules; replication investigations; questionnaires and opinionnaires; rating and ranking schedules; and statistical treatment of data.

Since Harcum is a private junior college, without public tax support, the financing of its institutional research effort is wholly determined by college executive management with no sustaining public monies. Such monies become available only through individual grants received for the conduct of specific programs or projects or, in the case of private foundation grants, for the support of specific research studies. On occasion, when the investigation subject so warrants, funds are furnished by the appropriate college department (an academic division or administrative office). In this connection, it is strongly recommended that the institutional research office function as a service agency to the college (and the faculty, in particular) and guard against becoming a bumptious bureaucracy!

In 1971, some 90 percent of the faculty and staff voluntarily and anonymously responded to a questionnaire requesting their candid evaluation of the institutional research reports furnished them. Virtually all of the respondents (94 percent) rated these reports on a five-adjective scale of "Exceptional," "Considerable," "Some," "Little," and "None," to fall within the range of "Exceptional" to "Some." Most respondents (52 percent) specified "Some" -- the mid-value rating on this five-level scale. No claim is laid to equal-step-gapping, or other sophisticated measurement techniques for this simple, face-valid rating scale.

Since Harcum decision makers continue to seek improved methods of college operations, the rationale for institutional research at the college is crystal clear and compelling. Under the leadership of a progressive, responsive management, institutional research has moved into the mainstream of college operations. By becoming directly involved in *filling information gaps*, it is relevant to *all* institutional problems, concerns, and operations.

It is axiomatic but nonetheless pertinent to note that without the wholehearted endorsement of executive management, the essential staff-service function of institutional research is either an impossibility or simply a meaningless, wasteful window dressing. The financial support of institutional research should not be left to chance alone. If a research program is considered important, specific and realistic provision must be made for it within the college budget. At Harcum, management has totally supported institutional research, permitting freedom of inquiry, follow-up of research findings, and necessary financial support.

Michael Scriven's phrase "Results Rather than Rhetoric" might well be the motto for institutional research. After all, not only is the phrase alluringly alliterative, but it conveys a commitment to empirical evidence and a dismissal of mere word wizardry! And so at Harcum, the pragmatic answer to the question "Why Institutional Research?" has been that we have found it provides ways and means for identifying and analyzing the college's problems objectively. This is the first major step toward improving current programs and operations and planning intelligently for the future. In short, to avoid the twin pitfalls of complacency and misdirection, ongoing institutional self-study is a necessity.

Numerous management specialists have suggested that education, like industry, should ask many searching questions of itself. It is particularly important to recognize that the need for, and the involvement of, teaching and administrative faculty in on-going, self-evaluation designed to improve college operations (which, incidentally, is probably as useful a definition of institutional research as any) is as great in the two-year college as it is in the four-year institution. In these days of accelerated change, the two-year, postsecondary college can no longer be casually relegated to the "little sister" category, not when it is anticipated that within a scant 5 years, 40 out of each 100 students enrolled in higher education in America will be in two-year colleges. Stuart Marsee, former president of Santa Fe Community College, has said:

> Properly conceived and objectively pursued, such institutional self-study may possibly result in data that presents a case against a popular cause. The researcher must be prepared to accept the fate of this eventuality. Also, he must not consider it a personal rebuke if the president, or others, act contrary to the direction his study supports. His responsibility is for research, and not for management decision-making.

Concerted and systematic efforts to encourage the use of research are essential. To spread the word, some form of blanket coverage should be given to the findings of research studies. Where numbers warrant, a periodic institutional research letter can help to keep the IR dimension among the upper priorities of faculty/management activities.

One final aphorism: Haste makes waste. Most innovative programs in education, including IR programs, have been plagued by the tendency of both observers and participants to want immediate, visible results. We suffer from the habit of pulling up the plant by its roots every few months to see if it is alive and growing! Resist that anxious urge; set reasonable target dates and then patiently insist they not be tampered with!

INSTITUTIONAL RESEARCH AND MANAGEMENT: THE ESSENTIAL PARTNERSHIP

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Catonsville Community College
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In the past, the role of institutional research has been to assist the college in goal achievement in a number of ways, including documenting enrollment patterns, assessing the effect of various teaching methods on student learning, projecting demand for new programs, and predicting the effect of those programs on campus resources.

Today, we are seeing a shift in our institutions' needs resulting from external pressures such as slower growth, more part-time adult students, diminished resources, additional state control, and internal pressures such as collective bargaining, demands by faculty for meaningful participation in governance, and an increase in the number of students in need of developmental skills.

The roles of administrators have altered dramatically over the last 10 to 15 years as have those of institutional researchers. Today, responding to external and internal pressures, both institutional researchers and college administrators are on the brink of perhaps the most dramatic change of all: a shift from research to planning and from administering to managing. The following chart shows the relationship between various institutional phases and the roles of administrators and institutional researchers:

Institutional Phase	Role of Administrator	Role of Institutional Researcher
phenomenal growth, plentiful resources	building	reporting
slowed growth, adequate resources	contemplating, evaluating	researching
little growth, diminished resources	managing	planning

The following descriptions give a relatively detailed view of the three types of institutional research:

Reporting: This kind of research is usually an initial response to administrators both on campus and at the state and federal level that describes in rather limited terms what is occurring in higher education institutions. The need for reporting has not abated, particularly at the federal level, and reports as well as their data elements and subgroupings continue to proliferate. Reporting usually requires the kind of information that is routinely collected.

Examples of these reports are: the federal government's Higher Education General Infomation Surveys, student profiles, grade distributions, enrollment reports, staff profiles, and facilities inventories.

Researching: This type of institutional research has been provided in response to administrators' and faculty members' desire to assess and evaluate what they have been doing. This desire has apparently continued to grow: Witness the increasing numbers of institutional research positions being created on community college campuses and the burgeoning number of documents added to the Educational Resources Information Centers system annually.

Examples of questions asked of researchers are:

To what degree...

> are college goals being met? is the community served? are students satisfied with their college's programs and services? is their a relationship between preferred learning styles of students and knowledge gained from a congruent teaching style?

Is there a significant increase...

> in knowledge gained if group discussions supplement lectures? in the number of faculty favoring collective bargaining after class sizes have increased 20 percent and inflation has eliminated any salary increase? in the number of women students enrolled in programs nontraditional for them as a result of concerted publicity, counseling, and recruiting efforts?

Planning: Undoubtedly, planning is done in response to the needs of administrators to allocate diminishing resources in the most efficient and productive manner. Planning builds upon the information collected for reporting and research purposes, but it does more than describe what has been. It can describe what will be and what will be "if." Thus, it is concerned with analysis of the existing, simulation, and projection. It differs from reporting and research in that it deals with more than the quantitative; it is concerned with the qualitative, policies, and philosophies. Planning seeks to facilitate selecting the best methods for achieving institutional objectives.

Examples of planning include:

> enrollment projections, facilities demand projection, forecasting needed programs or courses, establishing program enrollment demand, and determining class size ratios and needed faculty based upon a proposed schedule.

Planning asks questions such as:

> What if a calendar change were made? What is the probable effect on enrollment, efficiency, student

enrollment, needs of students who wish to transfer, work load of affected administrative offices such as admissions, registration, public relations, and the computer center?

The Ability to Manage

The ability to plan, to manage, calls for new skills. What's needed is the capacity to view the institution and it's goals objectively in order to

- identify institutional strengths to be built upon, and deficiencies to be corrected;
- conceptualize institutional parameters empirically;
- be aware of available internal and external resources;
- 'talk with' and 'to' computers;
- ask the 'what if' questions; and
- implement the results of these analyses.

Each of you could add to this list, but the major point is that we're seeing the scholar president of yesteryear, who has read all the classics, now needing to read a computer printout; the president who conceptualized a new way to analyze literature, now needing to conceptualize institutional parameters; the administrator who hardly had time to ask "what are we doing?", now asking "how are we doing?" and also beginning to ask "how can we continue to do it?" The move from administering to managing is upon us; note, for example, the growing number of presidents from fields such as business, who've documented their ability to manage.

What, then, is the researcher's role as the partnership continues? In essence, it is to facilitate management--to plan.

The responsibilities will differ; they are dependent upon such factors as the stage of development of the institution, the willingness of campus personnel to become involved in developing computerized planning systems, the time administrators are willing to devote to the analysis of alternatives and their capability for conceptualizing institutional parameters, as well as their understanding of simulation and computers.

In some instances, the institutional researcher may need to teach institutional planning, organize the development of planning models, analyze for presentation the results of simulation, or, in some instances, play an advocacy role for a single, alternative course of action. We have not functioned in the planning-managing stage long enough to define with any degree of accuracy the primary role and responsibilities of institutional researchers. Just as we borrowed frameworks from the disciplines to conduct our research, we must borrow and adopt frameworks for planning from each other, from business and industry, and from organizations that develop "model" frameworks.

I can't think of a more challenging, interesting, or stimulating place to be professionally than in institutional research today. In five years, I hope we take the time to look back to see how our roles have developed. And, lest we feel that anything is truly new or novel, I'd like to share with you a framework I came across after I'd developed my thoughts concerning the evolution of community colleges and the role of institutional researchers and administrators.

RELATIONSHIP BETWEEN ORGANIZATIONAL PHASE AND TYPE OF INQUIRING SYSTEM*

Organizational Phase	Types of Data	Type of Inquiring System
1. Creativity	personal observation, experience, direct feedback	informal, interpersonal, judgmental, synthesis, consensual; (Kantian or Hegelian)
2. Direction	add: functional transactions (accounting, student records)	add: standard format reports of transactions; functional budgets; annual reports; some computerization (Leibnitzian)
3. Delegation	add: more detailed transaction data by operating unit, sources and uses of resources	add: unit cost analysis; seeking comparative data on costs, workload and performance data; computers required (Leibnitzian)
4. Coordination	add: standardized data elements	add: objectives expressed as programs; PPBS attempted; simulation models to evaluate alternatives; program cost analysis; regular data exchange; extensive computerization (Kantian)
5. Collaboration (which may transform to 2 or 1)	add: personal feedback, process feedback	add: flexible output formats; eliminate standard reports, PPBS, standard unit costs analyses; integration of previous decisions with new IS design (Hegelian or Singerian)

add: means the listed characteristics are in addition to the characteristics listed above in the same column.

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*Weathersby, George B. Decision paradigms and models for higher education. Paper presented at the Forty-Eighth National Meeting of the Institute for Management Sciences and the Operations Research Society of America, Las Vegas, Nevada, November 1975.

The preceding chart is taken from a presentation made by George Weathersby of Harvard's Graduate School of Education. Institutional development is defined in five phases, and types of data and inquiry systems typical of each phase are defined.

I think Weathersby's chart provides an excellent framework in which to document changes in institutional researchers roles, and I hope you find it useful for documenting role changes.

AN ORGANIZATIONAL PERSPECTIVE ON INSTITUTIONAL RESEARCH IN THE EIGHTIES

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I am pleased to be here today among many of my friends and former colleagues. I am reminded of the plight of the conventional institutional researcher when I think of the story told many years ago by one Patrick Hooley when he was asked what America had done for the working man:

"Well," he said, "when I first arrived in America, a greenhorn from the Ould Sod, the only job of work I could get was with the White Wings, New York City's street cleaning department. Then it was 'Hooley, do this; Hooley, do that.' And after a bit, because I'd worked hard and done my job well, someone asked me to run for boss of the local union. I did that, and I was elected. Then it was 'Mister Hooley, sir'--and sometimes 'Mister Hooley darlin'."

"A few years later I was asked to run for alderman--which I did and was elected. Then it was 'Honorable Mister Hooley.' And pretty soon I was made chairman of the Board of Aldermen, and then, of course, they called me 'Mister President.' But it wasn't until a visit to the Ould Sod once again that I realized how America had elevated the working man.

"It was a beautiful Sunday morning and, with my handsome young niece on my arm, I mounted the marble steps of the Cathedral. As I pushed open the fine wooden doors and stepped inside, the choir began to sing, 'Hooley, Hooley, Hooley...'

"That's what America has done for the working man!"

In order for us to have a perspective on institutional research in the 1980s, we must first determine where institutional research fits into a college's governance and management systems. Like Hooley, the institutional researcher in the modern community college may have an unreal impression of his importance or how he is perceived by his peers. For whether we like it or not, the best data in the world, circulated nationally, will go unused if it is not merged with the decision-making process in a politically astute way.

My purpose today, then, is to share with you: (1) a management system based on goal setting and evaluation which utilizes institutional research (not as an end, but rather as the means to an end) in institutional problem solving; (2) a system of organizational relationships in which institutional research and planning can become the decisive factor in effective governance.

But before describing these systems, I'd like to make a few personal comments with respect to the governance and management of multi-unit community college districts.

Prior to leaving this area (New Jersey) three years ago, I would frequently hear the question asked: Is New York governable? I guess we now know the answer to that question. Those of us in multi-college districts now frequently raise that question with respect to our own districts.

Since moving to Kansas City, I've had occasion to ask myself how anyone can govern in a rational manner so complex an empire as this one: A sixty-year-old system serving the one million plus residents of the four Missouri counties of Metropolitan Kansas City through four colleges (three with formal campuses): Penn Valley Community College, located near the District offices in midtown Kansas City; Longview Community College, 20 miles to the south; and Maple Woods Community College, 20 miles to the north; and a fourth college, Pioneer Community College, that utilizes sites throughout the four-county area. These four colleges--each with its own name, its own president, its own distinctive characteristics, and its own hallmark--enroll more than 25,000 students.

Frankly, the challenge of managing this dynamic and complex system of colleges has rekindled my interest in institutional research and planning.

Why? Because in my judgment management control must exist in all organizations if they are to achieve their mission. The question, then, is: Do we want the control point to be at the management activity level or at the outcomes level? Are we interested in controlling activities or results?

This deliberation has led to the concept of accountability. And accountability implies the setting of goals and evaluation of outcomes and the need for data to set and measure them.

Governance, according to John D. Millet, is both a structure and a process that characterizes every social unit, implicitly or explicitly. In educational institutions, a dual structure usually exists: one for decision making about the administrative or *institutional affairs* of a college, and another for the academic or *instructional affairs*. In the first instance, the board of trustees, the president, and the administrative staff form the group that is preoccupied with institutional affairs; in the second instance, it is the faculty that are preoccupied with instructional objectives, instructional procedures, faculty selection and promotion, student academic performance, and the fulfillment of degree requirements.

Historically, these two structures--institutional and instructional--have been in conflict, though the need for such conflict remains obscure. However, we generally attempt to avoid the conflict through a form of governance called the community governance model, which attempts to bring together in one body representatives of the faculty, staff, students, and administration.

This model has met with limited success, and is highly suspect in an environment of collective bargaining. (Some would say it leads to collective bargaining.) For this reason, a new king of institutional leadership may emerge that will require much more extensive information sharing, more lengthy consultation, and more emphasis on goal setting and the measurement of results or outcomes of the decision process than the community governance model described above.

Peter Drucker,* in his book *The Age of Discontinuity*, stresses the importance of information sharing, goal setting, and evaluation to organizational health:

> The members of organizations, whether employees or students, should be expected to take the largest possible

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*Drucker, Peter. *The age of discontinuity*. New York: Harper and Row, 1969.

> responsibility for managing the community life of their institutions. A great deal of what managements are doing today is not related to performance and function. Why management should run the plant cafeteria, for instance, or be concerned with maintaining student discipline, is not very clear. And there are many other areas where community self-government can and should take over.
>
> Altogether a wise management does not speak of "management prerogatives." It does not even think of them. It limits itself to the spheres of direct relevance to its central task. Everything else it tries to unload. Wherever even serious malfunction would not endanger the attainment of the organization's objective--student discipline is an example--the wise executive says, "This is your job."
>
> It is also highly desirable to bring these "members" of organization as far as possible into the decision-making process. Otherwise they cannot acquire any understanding of the realities of their institution...Without such understanding organization is always endangered. And we know that participation in the actual decision-making process is the only way to acquire the rudiments of understanding...
>
> But in the areas that directly affect standards, performance, and results of the institution, the members cannot take over. There, the standards, the performance, and the results must rule them...

Organizational leadership, then, according to Drucker, requires participation by members of the organization for information-sharing purposes, but the authority to set goals and standards and to control the means of evaluation must not be delegated downward by top management.

These words have important implications for institutional research. If we are going to place more emphasis on information sharing, our information must be timely and accurate. And, if we are going to set goals and evaluate results, then we must know not only what results we are seeking but also how to measure the outcomes. These concerns lead me to suggest a management model for the 1980s that makes institutional research the keystone in the decision-making process.

Simplistically, the management model I propose is one that would allow decisions to be made on the basis of the evaluations of predetermined, mutually agreed to goals. That is, the board of trustees and the chancellor or president and his or her immediate staff should be primarily concerned with goal setting and evaluation, not management activities: Where do we want to go? (What are our goals and objectives?) And did we get there? (How well are we accomplishing our goals and objectives?) Middle management should be concerned with reaching the goals and those activities which move them toward those goals, and institutional research should provide the data and information to set the goals and then be responsible for measuring to determine whether the goals have been met--that is, evaluation of how well the institution has done.

A management model of this type is best driven by a Management by Objectives system, requiring the development of annual management objectives that are consistent with annual priorities and a system-wide master plan.

An MBO system distinguishes between conformity and freedom--conformity to goals and objectives that have been agreed upon in advance, but freedom in choosing the means for achieving those objectives.

Let's focus on the goal-setting process for a moment. It is essential for colleges to articulate their mission, goals, and objectives not only to assure that they will become a part of a management system, but also:

...to give direction to present and future work

...to provide an ideology that can nurture internal cooperation, communication, and trust

...to enable appraisal of the institution as a means-end system, and

...to afford a basis for public understanding and support.

As I've suggested, institutional goal determination also involves the establishment of priorities. As Peterson has said, "an institution's 'goal structure'--its rank-ordering of goals--can be said to be determined when some level of consensus has been reached through a process that is democratic and participatory." Similarly, Schoor pointed out that the goal determination process must be regarded universally throughout the district as fair if the resulting goal structure is to have legitimacy--that is, if it is to be accepted as appropriate in the college community.

Institutional goals are best conceived of in terms of outcome goals and support goals. Outcome goals are the ends the colleges seek; thus, they express the desired educational productivity.

Support goals are the goals that facilitate reaching the outcome goals. They have to do with instructional resources, educational environment, research and development, and so forth. Accomplishment of support goals is intended to optimize the previously identified outcome goals.

Once outcome goals and support goals are determined, a necessary next task is to translate these conceptions into precise, measureable program objectives. This process requires good institutional research.

Evaluation

The other half of this equation is evaluation. Evaluation has at least two desired outcomes: (1) to document movement toward objective achievement; and (2) to provide data for subsequent decision making.

It is essential, however, for system participants to feel that the evaluation is worthwhile; that is, the activities carried out in the evaluation must be seen as useful to those participants to whom the evaluation applies. Thus, if the participants feel ownership and believe that the evaluative activity will be beneficial, it is much less likely that either the evaluation objectives, methods, and procedures or the value of the results will be questioned. This kind of acceptance is critical to a management model based on goal setting and evaluation.

A second major objective of the evaluation process is to document the extent to which objectives are achieved. Wherever an inquiry is made, the function of evaluation is to provide evidence of the level at which objectives are achieved. From these data, decisions can then be made.

Within the Metropolitan Community Colleges, we have organized ourselves into a pattern which we think supports the concept of leadership through the setting of goals and the subsequent evaluations of goal achievement.

While we are a multi-college district with a central chancellor's office and somewhat autonomous colleges, what I am about to describe can work just as well in a single college if the president's office and staff are put in the same context as a "district office" in a multi-college system.

The Metropolitan Community Colleges emphasize functional management based on the concept of decision making relating to the differentiation of functions between the colleges and the chancellor's office.

It is the district's responsibility to provide an overall, comprehensive program of education and services suitable for all segments of the district population and to assure that these offerings are effective in meeting individual and community needs. The colleges, on the other hand, have the responsibility of developing and operating all educational programs and services in their service areas.

Accordingly, decisions are made at the district level when: (a) the proposed action or implied result of the decision requires either the board's or the chancellor's approval; (b) the decision requires total district resources to implement; (c) the decision is related to the legal responsibilities of the district; or (d) the decision would yield efficiencies through system-wide implementation (for example, a decision to make use of a single computer). All other decisions are made at the college level.

In operating the district, the key responsibilities for each management element are:

For the chancellor (as chief executive officer of the board)

1. Goal setting for the district, in accordance with the ten-year master plan;
2. Evaluation of all programs and services;
3. Development of new programs and services (district-wide);
4. Community and governmental relations (district-wide);
5. Certain centralized support services for the consortium of colleges;

6. Establishment of district-wide performance standards and systems in areas such as plant operations and maintenance, security and safety, financial aid, information systems, program review processes, internal audits, and communications systems.

For each president

1. The operation of all educational programs and services;
2. Goal setting for the college;
3. Evaluation of the teaching/learning process;
4. Support services for college departments.

There are similarities between our organization pattern and a federal system, in which a territorially diversified pattern calls for two levels of government--one to deal with the common, the other to deal with the territorially diverse. Perhaps our greatest challenge lies in our ability to foster diversity, creativity, and initiative on the part of our local colleges and, at the same time, to guarantee excellence of programs and services offered by each college in a cost-effective manner without unnecessary duplication of effort. These responsibilities welded together in a process of accountability, decision making, evaluation, and adequate staff support should provide the district with effective management for the future.

The Role of Research

Where do we fit institutional research into this system? At the district level, we have three support divisions: one concerned with fiscal and personnel matters, one concerned with public affairs, and one concerned with goal setting and evaluation. These divisions are headed by vice chancellors who report to me. The divisions are staff oriented and have no line authority over the colleges.

The division that is concerned with goal setting and evaluation is also responsible for our central computer services, the development of management systems, curriculum planning and coordination, long-range planning, and research and analysis, a service that is available for all other functions of the division. All data reporting about the district, both internal and external, flows through this office. Research and analysis program audits and evaluation, base data for goal setting, position papers, projections, and master planning are all integral to the mission of research and analysis in our system.

The fundamental role of this goal-setting and evaluation division is, first, to provide management with the data, alternatives, systems and standards, and tools necessary for effective decision making; second, to monitor the results in terms of the achievement of the goals set forth; and, third, to provide a master plan for the future in all areas of district activities.

This division, then, has a tremendous responsibility and a great impact on our district. We feel it is the link that makes effective management by goal setting and evaluation possible. The status of this division has grown, and its acceptance has been fostered throughout the district because the data it reports, the planning it does, the evaluation it makes, the recommendations it prepares, and the systems it develops are used. The single most important element in the management scheme I have just described is the intent to make full use of the products of research. You cannot organize in one manner and operate in another.

Even though you are not organized in the manner we are, or may never be, there still are critical questions that need to be answered now and into the 1980s to help support the decision-making process at your college. For example:

How many of you can supply your president with cost effective data for the programs offered at your institution?

How many of you can supply your president with accurate historical data on the operational and financial aspects of your federally assisted programs?

How many of your institutions have a specific set of measurable objectives?

How many of you have a usable master plan for the future?

How many of you have an evaluation plan to measure your college's effectiveness in meeting its mission?

Every conference I attend and every educational publication I read extols the virtues of accountability, cost effectiveness, simulation models, long-term legislative agreements, and performance indices and encourages educational administrators to think in these terms.

If we're not concerned with them, then nobody is. Yet if we are, are they used? The responsibility is shared. The instututional research must be done in a timely and accurate manner, and then other administrators and I must use the products you have generated. If we do not use them, you'll fall into disuse and we'll be ineffective managers.

I believe we have the tools, the computer models, and the concepts that allow us to measure the progress and process of our past decisions and provide ourselves with decision-making data for the future. However, I question whether we are making adequate use of these tools in today's problem-solving and managerial techniques. One of the most important things we must have in the 1980s is a full complement of management tools to support the decision-making process and we must be committed to using them.

Perhaps that statement sounds so stale to you that you can hardly believe that someone is actually saying it again. But let me tell you why I am saying it again. If this were August 1966 rather than August 1976, and we were attempting to look at the 1970s, how many of us would have been able to identify the following challenges, which we now face in the 1970s?

a. declining full-time enrollments

b. emergence of the "nontraditional" student

c. average student age of 30

d. resistant legislative bodies

e. severe budget constraints

f. faculty layoffs

g. collective bargaining

h. high unemployment

i. increased interest in vocational/technical training

I could go on with the litany of education problems we are now facing that were not predicted, but it is not necessary. What is necessary is for all of us to see that accurate data and effective long-range planning are crucial to decision-making. Therefore, I say to you, develop the management tools that will carry you into the 1980s. If the tools that have been developed work, use them. If they don't work, dispose of them and develop tools that will work. Always be cognizant of the fact that you are in a dynamic environment, and as you initiate change, make sure that your tools are flexible enough to accommodate that change.

Finally, we often promote the concept of institutional research and planning services for decision making; yet we end up making decisions based on "our years of experience." This technique of management always deals an effective death blow to research and planning services. If we are to organize for the 1980s to avoid decision making based on what Simon has called "little more than ambiguous and mutually contradictory proverbs," the need for institutional research to play a strong role is evident. And it clearly must play a decisive role within organizational structures that is based on goal setting and evaluation.

IDENTIFYING INSTITUTIONAL RESEARCH NEEDS

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It is critical to institutional research, if it is going to be used, to define sharply what it is, who it is for, and what it is for. Continuous reevaluation within our own institutions is necessary if we are to avoid the "shelf-decoration syndrome," the institutional researcher's nightmare of the results of his perception and genius decorating the shelves of his and other offices rather than being used. If we are in good communication within our institutions about what institutional research is, who its clients are, what the objectives of the research are, and how the objectives of institutional research are related to the goals and objectives of the institution, the client groups of the institution, and the client groups of the institutional researcher, we will have taken a long step toward producing research that will be used.

Identifying research needs, then, is critical to the whole enterprise. In order to identify institutional research needs, it is necessary to:

- define institutional research
- define the clients for institutional research
- identify their objectives, usually in terms of their clients
- define ways of communicating effectively with clients in order to meet their institutional research needs.

What Is Institutional Research?

First, what is institutional research? The answer is still being formulated. The 1964 AIR (Association for Institutional Research) Forum was devoted to development of a conceptual framework for institutional research, which in 1964 was a very new function even in many major universities. A valuable perspective on institutional research as an emerging profession can be gained from reviewing the proceedings of that forum.

Doi(2) commenting on "The Role of Institutional Research in the Administrative Process" in that forum, stated five propositions as a basis for a conceptual framework for institutional research: 1) the evolution of institutions of higher education from small, relatively simple institutions to large-scale, complex organizations essentially bureaucratic in structure and mode of operation; 2) the emergence of a new style of administration he characterized as "scientific;" 3) the evolution of institutional research from sporadic studies and collections of data to coordinated systematic conduct of studies needed for institutional improvement; 4) the emergence of institutional research specialists; and 5) the professionalization of those specialists. Conferees at the forum agreed with Doi that institutional research is a staff, not a line, function, that it should be used in the evaluation of policy, and that it should not formulate or implement policy. They were in considerable disagreement, however, about the place and role of institutional research within the institutional hierarchy, the primary populations it should serve, the kinds of research to be performed, the manner in which research should be performed, and the manner in which the use of research is suggested by IR personnel to others.

Carrothers(1), President of the University of Calgary, in a keynote speech to the 1973 Forum of the Association for Institutional Research, stated that institutional researchers are not policy makers or implementors but said that their role is crucial in policy formation. He sees institutional research in the 1970s playing a major part in reinforcing the work of those who are charged with developing an effective planning interface between governments and universities. He sees new needs for institutional research beyond providing planning and management information services. These include the need to provide facts that are above reproach as a basis for collective bargaining, the need to provide information about the educational marketplace in the context of the open university, the need to make management development systems designed by consultants relevant to the university, and the need to develop and coordinate management information systems with other institutions and organizations. Carrothers sees the major role of institutional research in the application of rationality to management and in the understanding of the limitations of rationality -- institutional research must not allow the quantification of the unquantifiable. Institutional research, according to Carrothers, is the new buffer between universities and the shifting forces of politics.

Kibbee(4) took this concept a step further. In "The Hazards of Planning - Predicting Public Policy," he said that institutional researchers must not only act as buffers but that they must also predict public policy that is likely to affect their institutions.

In 1975, Higginbotham and Neill(3), in a survey of Michigan community college presidents for the Michigan Community College

Association for Development and Research, asked the presidents' concepts of institutional research. Their responses and the concepts to which they were responding are shown in Table 1.

TABLE 1

BELOW ARE FOUR DIFFERENT CONCEPTS OF INSTITUTIONAL RESEARCH TYPICALLY HELD BY INDIVIDUALS.

WHICH CONCEPT MOST CLOSELY COINCIDES WITH YOURS?

-	Institutional research is the routine collection and tabulation of data. These data may or may not be used to study particular problems or practices of the institution.
35.2%	Institutional research is the continuous investigation and data collection needed for administrative decision making (i.e., budgetary analysis, space utilization studies, enrollment projections).
47.0%	Institutional research is the continuing self-study of all phases of institutional operations (i.e., all subject matter areas of the institutional program, institutional organization, clientele, personnel).
17.6%	Institutional research is the long-range planning, goals/objective setting and evaluation process for all phases of institutional operations.
-	Other
-	No opinion
Total 99.8%	
N (17)	

From this very cursory overview of recent viewpoints on the concept of institutional research, it can be seen that most intelligent observers have moved away from the concept of simple data gathering and tabulation toward the concept of institutional self-study, and are placing increasing emphasis on the role of institutional research in:

- policy formation
- goals and objectives

- evaluation setting, and
- institutional planning.

Defining Clients for Institutional Research

As a starting point for discussion at this conference, I would like to suggest that although our institutions may differ, the most effective way we can assist our clients within the institution is to work with them to identify their client groups, the objectives and goals of those groups, and determine how the progress of their institutions toward those the objectives and goals can most effectively be measured. Keeping in touch with the college's client groups and their goals and objectives is the essence of planning for community-based education. Keeping in touch with progress toward meeting those objectives is the essence of accountability or productivity or zero-based budgeting, or whatever other phase you are currently using for knowing where you stand.

If we as institutional researchers can identify the college's potential clients and their objectives, then we can assist in defining the goals and objectives for the college, help our clients within the college to identify research information they need, and establish a basis for identifying college goals and objectives, setting college policy, and identifying planning needs. Potential clients of the college can be identified for each institution and will vary by institution. Some suggested groups might fall into the following kinds of categories:

Potential Students

high school students
working people

  - professionals
  - blue collar workers
  - sales/service workers
- people at home
  - women
  - older persons
  - retired persons
  - young children
  - unemployed persons
  - handicapped persons
- institutionalized persons
  - jail inmates
  - persons in nursing homes

Potential Contractors for College Services

- businesses
  - contract programs
  - cooperative programs
  - employers of graduates
- industries
  - contract programs
  - cooperative programs
  - employers of graduates
- governments
  - contract programs
  - cooperative programs
  - employers of graduates

labor unions
    apprenticeship programs
    contract programs

Potential Supporters

local indivudual taxpayers
local businesses and industries
state government
federal government
business/professional organizations
foundations

This is hardly an exhaustive list, and, of course, many of its groups overlap, but the point of it is to start with those for whom the basic mission of the institution is service. If the groups the institution identifies as its priority service groups can be reached and their objectives identified, this will be an excellent starting point for defining the objectives of the institution and its programs. Once the institution's objectives are defined, the base is established for another important institutional research activity -- evaluation of progress in meeting objectives.

Defining Institutional Policy, Goals, and Objectives

If you as an institutional research officer are able to assist the administrative staff, faculty, and students in your institution in defining the groups they serve, the objectives those groups have, and the relationship between objectives of their client groups and their own program objectives, you will find that you are in the process of assisting in the definition of institutional policy, goals, and objectives.

This format should be understood as a conceptual framework for defining institutional research needs rather than as the first project an institutional research officer should undertake for his institution. The state of the art of identifying the objectives of a college's potential client groups is in its infancy*. Even if it were advanced, the completion of a research effort which would identify all the potential client groups of an institution, their objectives, the institutional objectives which follow from those, the measurements which will evaluate progress toward meeting those objectives, and so on, would be a massive undertaking requiring an army of researchers.

Some institutions (my own included), however, have made some preliminary efforts toward identifying such a conceptual framework. With the assistance of an Advanced Institutional Development Grant, we have been able to complete a community needs analysis and an institutional goals inventory using the Institutional Goals Inventory developed by Richard Peterson of Educational Testing Service (ETS).

In May 1975, Delta College Senate President Owen Homeister appointed a College Goals Committee with the following charge:

1. Prepare a set of institutional goals and a mission statement for consideration and adoption by the Delta Senate and Board of Trustees by July 1, 1976.
2. Identify those goals that should be given priority during the next 2-5 years.

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*At the 1976 AERA Annual Meeting, a paper presented by Belle Ruth Wilkin of the Alameda County, California Office of the Superintendent of Schools entitled "Needs Assessment Models: A Critical Analysis" concluded that few models have been validated and that many in wide use employ oversimplified methods for identifying discrepancies and levels of criticality and for setting priorities for action.

Since the committee was to deal with institutional goals, it was important not only to have broad representation but also a committee of reasonable size. The following appointments appeared to satisfy both requirements:

Marjorie Leeson, Chairperson, Professor of Business
Hal Arman, Assistant to the President
Bruce Corliss, Professor of Geology
Ron Crossland, Associate Dean for Community Education
(R. Wieland - Alternate)
Jessie Dolson, Assistant Professor of Nursing
Saundra Torns, Counselor
Don Halog, Assistant Professor of English
Richard Klein, Social Science Division Chairman
Leonard Marsico, television producer/director
Ralph McGivern, Associate Professor of Architecture
Willie Thompson, Academic and Student Affairs, Administrative Assistant
Richard Wirtz, Associate Director of Admissions
Resource Persons: Don Laughner, AIDP Coordinator
Leslie Myles, Director of Research and Development
Gene Packwood, Research Associate

The ETS Institutional Goals Inventory was administered to several groups during September 1974. All members of the faculty, administration, and Board of Trustees were sent questionnaires while other groups were sampled. Results were tabulated separately for each of the following groups:

Group	Number of Respondents
Board of Trustees	7
Administration	46
Faculty (full-time)	133
Faculty, Community and Continuing Education	36
Students (academic, on-campus)	236
Students, Area Centers	89
Students, Community Education	96

A second major source of input was the Residents Learning Interests Survey. The Learning Survey had two major parts: 1) a survey of 1,500 tri-county households, and 2) a survey of Delta students.

Responses were received from approximately 60 percent of the households with a total of more than 1,600 individual responses. A slightly altered form of the same questionnaire was administered to more than 500 students, on and off campus.

Additional sources of information included the Student Reactions to College Survey, the 1973 North Central Accreditation Report, and the consulting services of Dr. James Nelson, Michigan State University, and Dr. James Harvey, McManis Associates, Inc.

Formulation of the Goals

Beginning on May 28, 1975, when the committee first met, the process of writing the goals went through three stages, eventually concluding in March 1976 when the goals were submitted to the Assembly in the form of a questionnaire.

Stage I: On May 28 and June 4, the committee was given the information already described in this report. On the first date, the committee's charge was explained to the members.

Leeson appointed a subcommittee (Halog, Arman, McGivern) to prepare a new mission statement proposal. In addition, the committee was divided into four subcommittees:

1. Arman, Torns, and Wirtz (chairperson)
2. Corliss, Halog, and McGivern (chairperson)
3. Klein, Marsico, and Thompson (chairperson)
4. Crossland, Dolson (chairperson), and Leeson

On June 11, each subcommittee was assigned specific goal areas from the Institutional Goals Inventory and asked to consider, in terms of the college's needs and situation, specific goals for Delta. The subcommittees were asked to be ready to report their recommendations to the full committee by September. On June 18, the mission statement subcommittee presented its report.

Stage II: From September to November, a series of workshop sessions to review the subcommittee reports took place. On September 11, a format developed by subcommittee I was approved for use by all subcommittees. Two weeks later, the committee passed on a revision of the mission statement.

The first draft of the goal statements was completed on November 18. It was then edited by a committee (Betty Lockwood, Ron Crossland, and Don Halog) and submitted in December to four groups for evaluation: the Student-Senate Liaison Committee, the Teaching Faculty Executive Committee, the Administrative Council, and the Academic Council. Each group was asked to determine if the suggested goals were appropriate for Delta College. In addition, each member of the reviewing groups was asked to look for areas that were important to the development of Delta College but not reflected in the suggested goal statements.

Stage III: In meetings held during January and February, the recommendations of the four groups that reviewed the suggested goals were evaluated, and a final draft of the goals was developed. On February 5, a committee (Dolson, Marsico, McGivern, and Packwood) was asked to prepare a questionnaire consisting of the major and supportive goal statements. On February 11, the committee reviewed and accepted two new goal statements submitted by the Academic Council. Gene Packwood was given the responsibility of distributing the questionnaires to the members of the Assembly and assembling the results for analysis.

Results of the College Goals Committee Questionnaire

After the preparation of the Mission Statement, 19 Major Goals and 110 Supporting Goal Statements were developed by the College Goals Committee and reviewed by the Teaching Faculty Executive Committee, Academic Council, Administrative Council, and Senate-Student Liaison Committee. Then the revised statements were sent to all Senate Assembly members for their reaction. A questionnaire was developed and piloted on the College Goals Committee. Assembly members were asked to rate 1) the importance of each major goal and supporting goal to Delta College, and 2) the priority (compared with present priority rating) that should be placed on each supporting goal over the next one to five years.

During February 1976, questionnaires were sent to the 266 Senate Assembly members. Each senator was asked to contact the members in his or her unit to encourage them to complete the questionnaire. There were 138 questionnaires returned, for a 52 percent return rate.

The Assembly members who responded to the questionnaire felt as a group that all the major goal statements and supporting goal statements were of at least average importance. As a group, they recommended that the individual supporting goal statements receive approximately the same or slightly higher priority than they are currently receiving. While individuals differed in the importance they placed on certain goals, no goal statement was perceived by the group as being inappropriate for Delta College. These results represent the opinions of slightly more than half the Assembly members, and therefore, should be used as an adjunct to other information Delta has pertaining to those areas but should not be interpreted as absolute.

Senate and Trustee Action

The proposed Mission Statement and Major Goal Statements were placed on the Senate agenda for the April 14, 1976 meeting. The Senate was asked to approve the Mission Statement and the 19 Major Goal Statements. The chairman of the Goals Committee indicated that the Supporting Goal Statements would be included in the full report of the committee. The Senate approved the statements and recommended that they be transmitted to the Board of Trustees for approval. On May 11, 1976, the Board of Trustees of Delta College approved the Mission Statement and the 19 Major Goal Statements. As a result of the trustees' action, the statements will now be used in the college catalog and other official college publications. Inclusion of the new Missions Statement and Goals should strengthen the philosophical foundations of the college and more clearly represent the intent of Delta College.

The college is now in the process of developing college-wide and departmental objectives in line with these goals. The Research and Development Office at Delta was fortunate in being able to obtain the Advanced Institutional Development Grant, a small percentage of which provided the resources and impetus for these goals and objectives-setting activities, but the R&D staff were also able to provide some assistance to the various offices and committees that worked on these goals. Not only does the college now have a conceptual framework for policy and planning, but its R&D office has a conceptual framework for institutional research in these goals and objectives.

After having said all this, let me also point out that the Office of Research and Development at Delta came into existence in 1967, at the request of the faculty when we conducted our institutional self-study in preparation for review by the North Central Association. Like most other institutional research offices, ours has existed until now without this conceptual framework. How can institutional research needs be identified without resorting to a large-scale effort of this kind, if local circumstances do not warrant this kind of major research effort?

One technique that has been used with success in some institutions is the establishment of a research committee. If the research committee is small enough to develop discussion, representative enough of the institution as a whole to avoid biasing the concentration of effort of the research office, and is used to identify needs areas rather than to review each request for research, it can be a very effective device.

Another method is to employ research techniques to identify your own research needs priorities. Sample interviewing of various members of the student body, faculty, and administrative staff could yield direction for research needs. (Since others at this conference will be speaking about research techniques, I will make no attempt to identify those that could be applied to this problem.)

Given the manner in which our own office was established and the institutional dynamics we happen to have, we have found that to do a good job for one requestor generates five more requests. We have found that requestor priorities tend to sort themselves out if we ask about the objectives of the research to be done and the objectives of the activity to be reviewed, if we ask people to work with us in developing timetables and doing much of the work themselves, which has become necessary due to the limited resources we have. Asking people who request research to become directly involved in the research has another benefit of ensuring that the research is actually used for decision making by the requestor. Because of this we continue to involve requestors in doing the research even if we are not short-handed.

Another factor that tends to sort out true priorities and to ensure more effective use of our office as a resource is our policy that research done for one requestor will not be released to another person without an authorization from the original requestor. This means that we do not become an "inspector general" for the administration or faculty. We also ask offices to work together where research crosses jurisdictional lines; that is, if one office requests research about the operation of another, we ask both to work together to develop the necessary investigation. It is rarely necessary to invoke these policies, but when it is, they tend to keep us out of institutional politics and preserve our impartiality, without which much of our work would be useless.

These techniques have helped us keep current on trends affecting our institution, and we continue to work toward the impossible goal of an ideal institutional research office.

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IS INFORMATION POWER?

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In looking at the relationship between federal and state agencies and local educational institutions, one should start with a clear understanding that the picture is totally unclear. Higher (or postsecondary) education (we don't even know exactly what to call it) is in a state of confusion. Clark Kerr, in an address presented at the 26th National Conference on Higher Education in 1971(7), said:

> Higher Education in the United States is facing a period of uncertainty, confusion, conflict, and potential change. . .higher education is faced with a staggering number of uncertainties: (1) the direction of change that will be taking place in a society that is ever more divisive, and in a world that is undergoing a cultural revolution; (2) the impact of the new educational technology; (3) its proper functions in terms of teaching, research and services; (4) the governance of the institutions; and (5) financing.

Speaking at the 56th Annual Meeting of the American Council on Education in 1973, Stephen K. Bailey(8) agreed that

> Today, we scarcely know who we are, let alone who's in charge. . . The more expensive we become, the more suspicious our protectors and providers become. . .we have a reputation -- at least in some quarters of our nation's capital -- for being exclusive, self-indulgent, patronizing, and sloppy. . .Eight thousand tax-paying proprietary schools want to know why training a historian for unemployment at the taxpayers' expense is better than training an accountant for useful employment at the learner's expense. And parents and legislators are listening for our answer or at least for an intelligible and defensible rephrasing of the question.

The federal government is no better off. In a delightfully mind-boggling report for the National Center for Educational Statistics in 1975, Pamela Christoffel and Lois Rice(3) pointed out that "The vast range of Federal postsecondary programs has been called a shopping list in search of a rationale."

Given this lack of clear policy direction, it is downright alarming to have to agree with the Second Newman Report(17) that "a sense of legitimacy for an issue of educational policy is often created by the existence of a federal program."

Most observers of this confused scene seem to believe that if you think that's bad, wait till you look at conditions in the 50 states. The request for proposals that generated the Christoffel/Rice report characterizes the Common Core of Data (CCD) Program of the National Center for Educational Statistics (NCES) as "a major new concept of the U.S. Office of Education intended to replace the current uneven and largely inadequate provision for education statistics in the 50 states, six outlying areas, and the District of Columbia. . ." (There are exceptions, and I share the speaker's table today with an outstanding one: Ivan Lach provides the Illinois Community College Board and the Illinois community colleges with the kind of research expertise and cooperative approach to expanding knowledge of the education enterprise which is the envy of many in the surrounding states.)

The Question of Dollars

Before the relationship between federal and state agencies and educational institutions is discussed for long, the question of dollars will inevitably arise. Some of us might question the statement made by Paul Wing and Leonard Romney(19) in October 1974 that "It is important to note that state agencies probably have a legitimate right to any institutional data at any level that could help them address important decisions and policy questions, particularly if they provide financial support to the institution."

However, it is difficult to argue with the proposition that if the federal or state agency is providing financial support, it has a right to know how its dollars are being spent and specifically, whether the goals of the funding are being advanced. The issues seem to involve kinds of data required, extent of data required in relation to financial support received, and the extent to which receipt of financial support entitles supporters to influence goals, objectives, and policies of the institution. These are not easy questions. Does giving you money to make your building barrier-free to physically handicapped persons give me a right to know that once in the door, those students really do find a teaching/learning environment that helps overcome learning barriers caused by their handicaps? If so, which questions are legitimate for me to ask to find that out?

Most experienced administrators know that a key to effective management is an effective management information system. If you don't know what's going on, you can't run a college. Now if you follow that rationale and if you want to maximize the control the college maintains over its own functioning and minimize the control external agencies can exert, then you will resist step by step the data encroachments which those external agencies are making. If you also believe that it is the nature of bureaucracy, your own included, to preserve itself and to grow, then you will assume that state and federal bureaucracies will, by their nature, want to preserve themselves and to grow, and that this may happen at your expense. Ben

Lawrence, Director of the National Center for Higher Education Management Systems, in his remarks before the 1976 National Assembly(12), paraphrased St. John as follows: "In the beginning was information -- and information is power." These assumptions will provide added incentive to resist the data demands of state and federal agencies.

But it seems to me that for both realistic and idealistic reasons, a good argument could be made against such resistance. Realistically, both state and federal agencies and our colleges recognize that, to paraphrase Pogo, "We have met the taxpayer, and he is us." When candidates run on the issues of zero budgeting and cutting bureaucracy, they are addressing all of us, and I suspect that a number of people here in the room support those concepts. If you support the concept of management by objectives, it is difficult to quarrel with the gentleman from Georgia when he advocates the concept of zero budgeting. And that brings me to the idealistic level. An institutional researcher who believes in educational objectives, criterion-referenced testing, and developing improved measures of the outputs of postsecondary education must experience considerable cognitive dissonance when he refuses to work with external agencies to develop data for rational decision making.

In short, I think that for realistic reasons we must cooperate with state and federal agencies in the provision of data because the taxpayers and their representatives will insist on some information, and we had better help ensure that it is reasonably related to the goals and objectives stated and that it is used appropriately. I think that for idealistic reasons, we must cooperate to improve data and data analysis for decision making if we are to be true to our emerging profession of institutional research, which is generated by the concept of rational decision making based on factual information.

Some Common Problems

There remain, however, some serious problems. The following is certainly not an exhaustive list, but the items included should serve to initiate some discussion. Some common problems are that:

1. Data is requested that is not used. If there is an inordinately long turnaround time in reporting the results of data or if it is widely known that most respondents to a particular report do not treat it seriously, neither the institutional research officer nor the institution which employs him is likely to favor an extensive investment of his time in developing good data for such reports.

2. Data requested is irrelevant or misleading. Some believe, for example, that reports such as the Higher Education General Survey (HEGIS) Degrees and Other Formal Awards Conferred give a false impression of productivity at community colleges. Although they have few graduates as a total percentage of their student population, community colleges nevertheless meet the objectives of a large number of their students who find jobs or go to transfer institutions or receive advancements as a result of their community college education. Modification of some data requests to fit student objectives may be in order.

3. Data already available elsewhere is requested again. Applications for Title III and Title VI funding, to cite two examples, request data which has already been provided in the Higher Education General Information Survey.

4. Respondents do not know why data is requested. There is a dual responsibility here: for institutions to be informed and for agencies to provide rationales explaining the relationship of data requests to program objectives.

5. Respondents lack resources to provide the data requested. It is always helpful to review data requests from time to time to sort out which information is really needed and being used for decision making and which was simply included on the form because it was something that was "nice to know." Smaller institutions, that lack the time and hardware to cope with detailed questionnaires especially resent data requests which require considerable research expertise and computer resources.

6. Data requested to check progress on one goal may inhibit progress toward another. An example of this is the use of the Costing and Data Management System of the National Center for Higher Education Management Systems (NCHEMS). Although NCHEMS in its Information Exchange Procedures project and now in its wide-scale implementation project cautions that cost data should not be compared without at the same time comparing program objectives, the message has not been heard by every agency. The concern that some institutions have is that a legitimate request by state agencies for comparative cost data on the programs they are funding may inhibit diversity in postsecondary education, and diversity is a goal of American postsecondary education.

7. Data requested does not reflect legislative intent. Since legislation is the result of compromise, the intent of the legislature with regard to specific programs is sometimes not clear. When the agency responsible for implementing the legislation also issues

regulations and requests data, the institutions that receive these requests may feel that they do not reflect legislative intent.

8. Data is requested on a number of goals not related to the program for which the college has requested funds. Acceptance of agency funds requires assurance of compliance with Title VII, Title IX, and a number of other legislative, regulatory, and executive order requirements. Some institutions may be willing to assure that they are making a good-faith effort to achieve these goals but resent the direct involvement of federal agencies in the development of institutional self-assessments, affirmative action plans, and so on. The recent Title IX protests of Brigham Young University and Hillsdale College are particularly interesting in this regard. They are protesting the federal government's direct involvement in their institutions because their students, not the institutions, have received federal assistance. Proponents of the voucher idea in which students can "vote with their feet" for the school that best meets their objectives should be particularly interested in the questions raised by these two schools. As with most of the criticisms cited above, there are intelligent people of good will found on both sides, and the answers are not so apparent as they might appear to be. As Wing and Romney(19) agree,

> Determination of the most appropriate information and associated level of detail is a matter that should, if possible, be determined jointly by the agencies and institutions concerned, based on their respective needs and capabilities. Needless to say, the final location of the "boundary" between institutional and state-level responsibilities will vary from state to state.

And they add, interestingly,

> It is important to remember that the locus of decision-making responsibility is not a simple function of size or any other single criterion, and for every rule of thumb that one can propose, there probably will be several exceptions among the fifty states.

This would seem to suggest that the locus of decision-making should be determined by logic. I should like to suggest, however, that logic has little to do with the locus of decision making. If it did, the resource and boundary questions in the Middle East could have been settled long ago. The locus of decision making is determined by political action based on power. And that brings us full circle, back to the power of economics and the relative power and decision-making authority of our colleges, the states, and the federal government. To quote Stephen K. Bailey again, we are facing

> ... a persistent human paradox: the simultaneous need for structure and for antistructure, for dependence and for autonomy, for involvement and for privacy, for community and for identity. Today, as we perceive this elemental paradox in the tensions between the academy and the state, it is useful to keep in mind its generic quality. For at heart we are dealing, I submit, with a dilemma we cannot rationally wish to resolve. The public interest would not, in my estimation, be served if the academy were to enjoy an untroubled immunity. Nor could the public interest be served by the academy's being subjected to an intimate surveillance.

In his remarks before the 1976 National Assembly of the National Center for Higher Education Management Systems, Governor Richard Lamm of Colorado(11) stated that some suggest higher education has traded its autonomy for state and federal funding and warned that the "almost 45-degree angle of the increase in total appropriations for higher education in recent years gives one pause."

Many observers, including those of us in postsecondary education, have been given pause by the growth curve in higher education enrollments and costs over the past 15 years. Many observers, especially those who wonder about the efficiency and effectiveness of postsecondary education, have compared these growth curves to the fever charts of state and local economies, the cost of living, the proportionate increase in costs of other public and quasi-public services, and have concluded that postsecondary education which receives public funds must be made accountable to those who pay the bills. I would not attempt to define accountability in this highly political context or set any precise boundaries on the data needs of state and federal governments in order to arrive at accountability. However, let me state unequivocally that there are very few remaining in postsecondary education, and particularly in community and junior colleges, who would dispute the need for accountability. I strongly support it. But I would ask whether the growth curves of enrollments and costs in postsecondary education are being viewed in the proper context.

If you believe that the growth curves in postsecondary education are alarming, those suggested by futurists such as Alvin Toffler in his Future Shock are absolutely terrifying. If 90 percent of the scientists who ever lived are alive today, and if the growth curve for future change is almost perpendicular, as Toffler suggests, then perhaps the 45-degree angle of growth cited by Governor Lamm is alarming, not because it is too high, but rather because it is only half as steep as it ought to be.

Some Final Questions

Let me leave you with these questions:

- What is the responsibility of postsecondary education to prepare the society to cope with an ever-accelerating pace of change?
- What is the responsibility of state and federal governments to invest in preparing society for that change?
- What are reasonable levels of investment?
- What are reasonable criteria to define the educational products and investments required?
- What are the data needs of postsecondary education institutions, state governments, and the federal government to determine if those criteria are being met?

There ought to be more forums such as the Assemblies called by the National Center for Higher Education Management Systems at which these questions are debated.

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